? t 492190/7

492190/7
DIALOG(R)File 139:EconLit

492190
TITLE: A Net Present Value Approach to Safety Stocks in a Multi-level MRP System
AUTHOR(S): Grubbstrom, Robert W.
AUTHOR(S) AFFILIATION: Linkoping Institute of Technology
JOURNAL NAME: International Journal of Production Economics,
JOURNAL VOLUME & ISSUE: 59 1-3,
PAGES: 361-75
PUBLICATION DATE: 1999
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505647/description#description
ISSN: 0925-5273
DOCUMENT TYPE: Journal Article
ABSTRACT: The Laplace transform and input-output Analysis have been used for formulating a basic theory for material requirements planning (MRP) in a sequence of recent papers. The transform has been used for describing time developments and lags of the relevant production, demand and inventory variables in a compact way including effects of order flows and lead times. Secondly, the transform has functioned as a generating function, and thirdly, the transform has been applied for assessing cash flows adopting the net present value (NPV) principle (or the annuity stream which is a variation of NPV). Input-output Analysis, in particular, the input matrix, has been applied for describing multi-level product structures. This has made the analysis compact and distinct. In the current paper the analysis of determining optimal safety stock levels in MRP systems is extended from a single-level model recently investigated to a multi-level system assuming production to take place according to a lot-for-lot (L4L) policy when applying the NPV as the objective criterion and disregarding the opportunities for joint set-ups. Relaxing the L4L assumption is also discussed.
?

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? show files;ds
File 145:(Tacoma) The News Tribune 2002-2005/Nov 22
         (c) 2005 The News Tribune
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         (c) 2005 The New York Times
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         (c) 2005 Ft. Wayne Newspapers, Inc
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         (c) 2005 The Cincinnati Post
File 723:The Wichita Eagle 1990-2005/Nov 21
         (c) 2005 The Wichita Eagle
File 724:(Minneapolis)Star Tribune 1989-1996/Feb 04
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         (c) 1996 Star Tribune
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         (c) 2005 The Plain Dealer
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         (c) 2005 St. Petersburg Times
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         (c) 2005 Seattle Post-Intelligencer
File 738:(Allentown) The Morning Call 1990-2005/Nov 22
         (c) 2005 Morning Call
File 740:(Memphis)Comm.Appeal 1990-2005/Nov 22
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File 741:(Norfolk)Led./Pil. 1990-2005/Aug 25
         (c) 2005 Virg.-Pilot/Led.-Star
File 742:(Madison)Cap.Tim/Wi.St.J 1990-2005/Nov 21
         (c) 2005 Wisconsin St. Jrnl
File 743:(New Jersey)The Record 1989-2005/Nov 22
         (c) 2005 No.Jersey Media G Inc
File 744:(Biloxi) Sun Herald 1995-2005/Nov 20
         (c) 2005 The Sun Herald

Set     Items   Description
S1          1   SPOT()MARKET()PRODUCT()COST? ?
S2        569   SPOT()MARKET? ?(30N)(ITEM? ? OR PRODUCT? ? OR MATERIAL? ? -
              OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INVENTORY OR STOCK)-
              (5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR BIDS)
S3         16   IMMEDIATE()(AVAILABLE OR DELIVERY)(10N)(ITEMS OR PRODUCT? ?
              OR MATERIAL? ? OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INV-
              ENTORY OR STOCK)(5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR
              BIDS)
S4      15302   PRODUCT? ?(2N)COST? ?
S5    6414942   PRICE OR PRICES OR PRICING OR COST? ?
S6         70   SPOT()RATE? ?
S7          0   SAFETY()STOCK()LEVEL? ?
S8        401   (SAFE OR SAFETY OR RISK)(6N)(STOCK OR INVENTORY)(6N)(LEVEL?
              ? OR VOLUME? ?)
S9          1   (S2 OR S3) AND S6
S10         0   (S2 OR S3) AND S8
S11         0   S6 AND (S7 OR S8)
S12         1   S9:S11
S13         1   S12 NOT PY>2002
S14         1   RD (unique items)
S15         2   S1 OR S9:S14
S16         2   RD (unique items)
? t16/3,k/all

 16/3,K/1     (Item 1 from file: 471)
DIALOG(R)File 471:New York Times Fulltext
(c) 2005 The New York Times. All rts. reserv.

00006784 NYT Sequence Number: 075973800702  (USE FORMAT 7 FOR FULLTEXT)
RELIEF FROM OIL-PRICE INCREASES?: SPOT   RATES  FALL IN REACTION TO
New York Times, Late City Final Edition ED, COL 4, P 1
Wednesday July 2 1980
DOCUMENT TYPE:  Newspaper  LANGUAGE:  English   RECORD TYPE:  Fulltext
Word Count:  1111

RELIEF FROM OIL-PRICE INCREASES?: SPOT   RATES  FALL IN REACTION TO
...    in spot price would not lead to noticeable reductions in the retail
prices of petroleum  products  sold in the United States. But the drop in
spot prices indicates a weakened market...

...difficult for members of the Organization of Petroleum Exporting
Countries to continue pushing up oil  prices  unilaterally. It was this
price  leapfrogging that resulted in a doubling of world oil  prices  in
```

the past year, and a sharp rise in gasoline and fuel oil **prices** .
The **spot market** is an informal network of traders and brokers who buy, sell and swap spare cargoes of oil. The going **prices** on this unregulated market are generally regarded as a clear indication of where overall oil **prices** are headed. During shortages, spot prices tend to rise; during periods of oversupply, they tend...

16/3,K/2 (Item 1 from file: 738)
DIALOG(R)File 738:(Allentown) The Morning Call

11217120
LUMBER PRICES ;; THE COST OF SOME NEW HOUSES IS RISING AS BUILDERS SPEND MORE FOR BEAMS AND BOARDS
Morning Call (Allentown, PA) (MC) - Sunday, August 5, 2001
By: BETH W. ORENSTEIN Special to The Morning Call - Freelance
Edition: FIRST Section: REAL ESTATE/HOME Page: G1
Word Count: 1,371

... advertising for 84 Lumber, headquartered in Eighty-Four, Washington County, explains that lumber is a **spot market product** . **Costs** from the mills change daily depending on their inventory and market demand. "It's a...
?

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? show files;ds
File   2:INSPEC 1898-2005/Nov W2
         (c) 2005 Institution of Electrical Engineers
File  35:Dissertation Abs Online 1861-2005/Nov
         (c) 2005 ProQuest Info&Learning
File  65:Inside Conferences 1993-2005/Nov W3
         (c) 2005 BLDSC all rts. reserv.
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         (c) 2005 The HW Wilson Co.
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         (c) 2005 Info.Sources Inc
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         (c) 2005 The New York Times
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         (c) 2005 The New York Times
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         (c) 2002 The Gale Group
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         (c) 2005 NTIS, Intl Cpyrght All Rights Res
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         (c) 2005 Elsevier Eng.  Info. Inc.
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         (c) 2005 CSA.
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         (c) 2005 TWI Ltd
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         (c) 2005 PRA Coat. Tech. Cen.
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         (c) 2005 CSA.
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         (c) 2005 Inst for Sci Info
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         (c) 2005 CSA.
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         (c) 2005 CSA.
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         (c) 2005 CSA.
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         (c)2005 Japan Science and Tech Corp(JST)
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         (c) 2005 FIZ TECHNIK
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         (c) 2005 Elsevier Science Ltd.
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         (c) 2005 Contains copyrighted material
File 118:ICONDA-Intl Construction 1976-2005/Oct
         (c) 2005 Fraunhofer-IRB
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         (c) 2005 CSA.
File 144:Pascal 1973-2005/Nov W2
         (c) 2005 INIST/CNRS
File 239:Mathsci 1940-2005/Jan
         (c) 2005 American Mathematical Society
File 240:PAPERCHEM 1967-2005/Nov W3
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         (c) 2005 Elsevier Eng. Info. Inc.
File 248:PIRA 1975-2005/Nov W1
         (c) 2005 Pira International
File 293:Engineered Materials Abstracts 1966-2005/Nov
         (c) 2005 CSA.
File 315:ChemEng & Biotec Abs 1970-2005/Oct
         (c) 2005 DECHEMA
File 323:RAPRA Rubber & Plastics 1972-2005/Oct
          (c) 2005 RAPRA Technology Ltd
File 335:Ceramic Abstracts/World Ceramics Abstracts 1966-2005/Nov
         (c) 2005 CSA.
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200575
         (c) 2005  Thomson Derwent
File 344:Chinese Patents Abs Aug 1985-2005/May
         (c) 2005 European Patent Office
File 347:JAPIO Nov 1976-2005/Jul(Updated 051102)
         (c) 2005 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.

Set     Items   Description
S1          0   SPOT()MARKET()PRODUCT()COST? ?
S2        337   SPOT()MARKET? ?(30N)(ITEM? ? OR PRODUCT? ? OR MATERIAL? ? -
              OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INVENTORY OR STOCK)-
              (5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR BIDS)
S3          7   IMMEDIATE()(AVAILABLE OR DELIVERY)(10N)(ITEMS OR PRODUCT? ?
               OR MATERIAL? ? OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INV-
              ENTORY OR STOCK)(5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR
              BIDS)
S4      38885   PRODUCT? ?(2N)COST? ?
S5    4614515   PRICE OR PRICES OR PRICING OR COST? ?
S6        340   SPOT()RATE? ?
S7        211   SAFETY()STOCK()LEVEL? ?
S8        875   (SAFE OR SAFETY OR RISK)(6N)(STOCK OR INVENTORY)(6N)(LEVEL?
             ? OR VOLUME? ?)
S9          0   (S2 OR S3) AND S6
S10         1   (S2 OR S3) AND S8
S11         0   S6 AND (S7 OR S8)
?
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? t10/4/all

10/4/1 (Item 1 from file: 144)
FN- DIALOG(R)File 144:Pascal|
CZ- (c) 2005 INIST/CNRS. All rts. reserv.|
AN- <DIALOG> 15944991|
AN- <PASCAL No.> 03-0087582|
TI- **<French> Le trading des commodites energetiques en Europe : Cas de l'electricite|**
TI- <English Translation> Energy commodity trading in Europe: The case of electricity|
AU- HERVE Francis; GIRARD Philippe|
CS- EDF Trading Limited, France|
JN- Revue de l'energie|
PY- 2002|
NO- 541|
PG- 633-638|
SN- 0303-240X|
CO- REEND7|
AV- INIST-7701; 354000107207960010|
RF- 3 ref.|
DT- P (Serial)|
DT- A (Analytic)|
CP- France|
LA- French|
SL- English|
AB- Le trading des commodites energetiques differe du trading des autres commodites (metaux, cereales, etc.) par de nombreuses caracteristiques. A la suite du mouvement d'ouverture des marches electrique et gazier, qui a entraine un fort developpement du trading en Europe de l'Ouest, EDF Trading creee a la fin de 1999 est devenue une des principales compagnies de trading operant sur le marche europeen de gros des commodites energetiques.
DE- <English> Energy economy; Electricity; Trade; International trade; **Volume** ; **Spot market** ; **Stock excha** nge; Market structure; **Price** ; **Risk management** ; Electric utility; France; Business turnover; Financial result; Wholesale market; Over the counter market|
BT> Europe; Europe; Europa|
DE- <French> Economie energie; Electricite; Echange commercial; Commerce international; Volume; Marche-spot; Bourse valeurs; Structure marche; Prix; Gestion risque; Compagnie electricite; France; Chiffre affaire; Resultat financier; Compagnie EDF Trading; Marche gros; Marche de gre a gre|
DE- <Spanish> Economia energia; Electricidad; Intercambio comercial; Comercio internacional; Volumen; Bolsa valores; Estructura mercado; Precio; Gestion riesgo; Compania electricidad; Francia; Cifra negocios|
SC- 001D06A01C4; 001D06A01C2B; 001D06A01C2C; 001D06A01C2A; 230|

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? show files;ds
File 625:American Banker Publications 1981-2005/Nov 21
         (c) 2005 American Banker
File 267:Finance & Banking Newsletters 2005/Nov 22
         (c) 2005 Dialog
File 268:Banking Info Source 1981-2005/Nov W1
         (c) 2005 ProQuest Info&Learning
File 626:Bond Buyer Full Text 1981-2005/Nov 22
         (c) 2005 Bond Buyer
File 139:EconLit 1969-2005/Nov
         (c) 2005 American Economic Association

Set     Items   Description
S1          0   SPOT()MARKET()PRODUCT()COST? ?
S2         42   SPOT()MARKET? ?(30N)(ITEM? ? OR PRODUCT? ? OR MATERIAL? ? -
              OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INVENTORY OR STOCK)-
              (5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR BIDS)
S3          0   IMMEDIATE()(AVAILABLE OR DELIVERY)(10N)(ITEMS OR PRODUCT? ?
               OR MATERIAL? ? OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INV-
              ENTORY OR STOCK)(5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR
              BIDS)
S4       2192   PRODUCT? ?(2N)COST? ?
S5     500653   PRICE OR PRICES OR PRICING OR COST? ?
S6        359   SPOT()RATE? ?
S7          4   SAFETY()STOCK()LEVEL? ?
S8        122   (SAFE OR SAFETY OR RISK)(6N)(STOCK OR INVENTORY)(6N)(LEVEL?
             ? OR VOLUME? ?)
S9          0   (S2 OR S3) AND S6
S10         0   (S2 OR S3) AND S8
S11         0   S6 AND (S7 OR S8)
S12         0   S9:S11
S13         0   S12 NOT PY>2002
S14         0   RD (unique items)
S15        46   S2 OR S7
S16        35   S15 NOT PY>2002
S17        33   RD (unique items)
? t17/3,k/all

 17/3,K/1     (Item 1 from file: 625)
DIALOG(R)File 625:American Banker Publications
(c) 2005 American Banker. All rts. reserv.

0209012
Comment: How to Cut the Cost of Market Data by 30%
American Banker - November 25, 1997; Pg. 30; Vol. 162, No. 227
DOCUMENT TYPE: Journal     LANGUAGE: English     RECORD TYPE: Fulltext
WORD COUNT:       1,141

BYLINE:
By Pierre Buhler and Laurie Hollingworth, Madsion Group

TEXT:
...to combat a threat posed by
Reuters,  14  leading  banks allied to form Electronic Brokering  Service .
EBS
allows  foreign  exchange traders to view real-time  bid  and offer  prices
 on
their screens and execute trades electronically. It has since become the
world's leading electronic forex broker, serving 25% of the London  spot
 market  in major currencies.
   To be sure, successful efforts to discipline vendor  pricing  need not
involve entry into the data-dissemination business. Significant   price
relief can be obtained by one or more of the following steps:
   Negotiation with information...


 17/3,K/2     (Item 2 from file: 625)
DIALOG(R)File 625:American Banker Publications
(c) 2005 American Banker. All rts. reserv.

0041358
Slipping On Oil Slicks
```

American Banker - July 30, 1985, Tuesday; Pg. 11
WORD COUNT: 2,187

BYLINE:
By Dominic Lawson; Dominic Lawson covers oil and gas for the Financial Times in London.

TEXT:
... because in barter deals they could name that price as their unit of exchange for **goods** received. Naturally the receiver of the oil - which in Libya's case is frequently the Soviet Union - will sell on the oil at whatever **price** it can get quickly on the **spot market** .
Algeria continues to sell its oil at spot **prices** in the form of refined proement in the **pricing** of much larger gas exports.
Only Saudi Arabia is now refusing to allow free market **prices** to guide its pricing policy. The result was that the ARAMCO companies - Exxon, Mobil, Chevron...

17/3,K/3 (Item 3 from file: 625)
DIALOG(R)File 625:American Banker Publications

0032035
SIZING UP THE FIELD: Protectionism and Countertrade Diminish Role of World Trade as 'Engine of Growth'
American Banker - September 21, 1984, Friday; Pg. 37
WORD COUNT: 2,005

BYLINE:
By M. S. MENDELSOHN

TEXT:
...Rolls-Royce in exchange for 36 million barrels of oil. The impact on the Rotterdam **spot market** for oil was so unnerving that British oil companies promptly rushed in to support **prices** at the "request" of the British government (an **item** embarrassingly leaked to the newspapers).
This particular transaction underscored graphically the underlying objection to barter...

17/3,K/4 (Item 4 from file: 625)
DIALOG(R)File 625:American Banker Publications

0011739
Structural Change Accounts for Soft Oil Market: Global Recession Is Not the Only Factor Contributing to Current Petroleum Glut
American Banker - November 4, 1982, Thursday; Pg. 16
WORD COUNT: 2,163

BYLINE:
BY PHILIP K. VERLEGER; Mr. Verleger is an economic consultant based in Washington, D.C., specializing in oil markets.

TEXT:
...the spot market, the rise of brokerage firms as traders, and the rise of the **spot market** represents a fourth major change in the structure of the oil market.
The growth of these new institutions has had the effect of increasing the competitiveness of world **product** markets while reducing the potential **cost** associated with shopping around.
Prior to the development of these institutions, it was impossible for...

17/3,K/5 (Item 5 from file: 625)
DIALOG(R)File 625:American Banker Publications

0005674
Oklahoma's Penn Square Bank, Maverick Oil Patch Lender: Some Say It's Bet Too Heavily on Energy

American Banker - April 26, 1982, Monday; Pg. 1
WORD COUNT: 4,237

BYLINE:
By PHILLIP L. ZWEIG

TEXT:
... will have a substantial cushion," he adds. "There is adequate coverage for reduction in the **price** of **product** ."
The **spot** **market** for OPEC oil has recently ranged from $28.50 to $32 per barrel, depending on...

17/3,K/6 (Item 1 from file: 267)
DIALOG(R)File 267:Finance & Banking Newsletters

04590853
US and Europe are Active
Rick Appin & Savita Iyer
High Yield Report
June 10,2002 DOCUMENT TYPE: NEWSLETTER
PUBLISHER: SECURITIES DATA PUBLISHING
LANGUAGE: ENGLISH WORD COUNT: 2227 RECORD TYPE: FULLTEXT

TEXT:
...to the rule. Its distinction is that it produces high value-added, high-quality steel **products** to the auto industry, with 75% of its sales made under contract," he said.
AKS has been able to avoid the commodity- **product** **price** troughs of plate or slab steel, it has limited sales exposure to the **spot** **market** and its depressed **prices** , he said. That a steel company can even access the debt markets at this juncture to lower its interest **costs** and extend its debt maturity schedule speaks well of AKS' unique financial position, he said...

17/3,K/7 (Item 1 from file: 268)
DIALOG(R)File 268:Banking Info Source

00411504 98976436 (USE FORMAT 7 OR 9 FOR FULLTEXT)
The futures market forecasting tool as an imperfect crystal ball
Emmons, William R; Yeager, Timothy J
Regional Economist, p10-11, Jan 2002 DOCUMENT TYPE: Periodical; Feature
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 1,578

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... traded in Chicago during the mid-1800s; later, futures contracts on industrial commodities, precious metals, **stock** indexes, currencies and interest rate instruments were added, and other exchanges were opened.
Forward contracting is used for hedging a pre-existing risk and for speculating on **price** movements. A farmer with a corn crop in the ground is exposed to the risk that corn **prices** in the **spot** **market** will be low when his crop actually is harvested and sent to market. To hedge...

...sell a corn futures contract for delivery at harvest time. This contract locks in a **price** today for corn that will be delivered in the future; so, the price risk is...

...soybeans for approximately two months.
Why must spot and futures prices be linked by carrying **costs** ? If the soybean futures **price** exceeded the spot **price** by more than carrying **costs** , then an arbitrageur could earn a sure profit by selling a soybean futures contract, purchasing the soybeans in the **spot** **market** with borrowed funds and delivering the soybeans to the buyer of the futures contract on the settlement date. Because the difference between the futures **price** received and the spot **price** paid would more than cover carrying **costs** , a risk-free profit would be guaranteed. Conversely, if the futures

price fell below the spot price plus carrying costs , then market participants would sell their inventories in the spot market and buy futures contracts, putting simultaneous downward pressure on the spot price and upward pressure on the futures price . Thus, traders' pursuit of riskless profit opportunities would move spot and futures prices quickly back...

...will be the spot price plus carrying costs. In effect, traders allocate the large existing inventory through time, governed by the cost of carrying inventory.
Storable Commodities with Modest Inventories
Interpretation provides a good example of a storable commodity with typically modest inventory levels. If the supply of oil is expected to increase in the future, then futures prices will fall relative to spot prices . Although arbitrageurs theoretically could profit by selling oil in the spot market when that price is higher than the futures price , the shortage of inventory prevents it. As of Nov. 1, 2001, the spot price for a barrel of crude oil was $21.70; the November 2002 futures price was $21.27. Clearly, an arbitrageur could profit by selling spot oil in 2001 before the spot price declines, but inventory shortages prevent it.
If, on the other hand, supply is expected to be low in...

17/3,K/8 (Item 2 from file: 268)
DIALOG(R)File 268:Banking Info Source

00338577 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Windshield credit analysis
Penson, John B Jr
Agri Finance, v2, n6, p15, Jun 1998 DOCUMENT TYPE: Journal Article
ARTICLE TYPE: News LANGUAGE: English RECORD TYPE: Abstract Fulltext
WORD COUNT: 00675

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... new century Gone are the deficiency payments that made up the difference between announced target prices and spot market prices . Gone are the ad hoc disaster payments that assisted farmers in periods of floods and...

...S. agriculture today is thus reliant on a growing world demand for food and fiber products to keep commodity prices at levels that do not result in another financial crisis like...

17/3,K/9 (Item 1 from file: 626)
DIALOG(R)File 626:Bond Buyer Full Text

0213131
Tax Enforcement: IRS Lawyers: Solid-Waste TAM Doesn't Indicate New Policy
The Bond Buyer - May 12, 1999; Pg. 4; Vol. 328, No. 30639
Word Count: 636

BYLINE:
By Amy B. Resnick

TEXT:
...bought its waste - old corrugated cardboard in this case - "from collectors, consolidators, and brokers, paying spot market prices for the material ."

Because the cardboard had value on the date the new money bonds in the transaction...

17/3,K/10 (Item 2 from file: 626)
DIALOG(R)File 626:Bond Buyer Full Text

0182348
Georgia Gas Agency Will Sell Debt to Lock In Supply
The Bond Buyer - October 7, 1996; Pg. 7; Vol. 318, No. 29997
Word Count: 550

BYLINE:
By Jon McKenna

TEXT:
...but there is
also a growing advantage in using cheaper dollars to cover future debt **service** rather than paying today's **spot - market prices** .

There aren't many municipal gas providers in the U.S., but several are planning...

17/3,K/11 (Item 1 from file: 139)
DIALOG(R)File 139:EconLit

718089
TITLE: Ethical Foundations of Financial Regulation
AUTHOR(S): Kane, Edward J.
AUTHOR(S) AFFILIATION: Unlisted
PUBLICATION INFORMATION: National Bureau of Economic Research, Inc, NBER Working Papers: 6020
PUBLICATION DATE: 1997
AVAILABILTY: http://www.nber.org/papers/w6020.pdf">URL
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

...ABSTRACT: well-intentioned government to use its discretion and choose actions for the common good. Agency- **cost** theories portray regulation as a way to raise the quality of financial **services** by improving incentives to perform contractual obligations in stress-stressful situations. These private-benefits theories count on self-interest-ed parties to **spot market** failures and correct them by opening more markets. In financial **services** markets for regulatory **service** create outside discipline that controls and coordinates industry behavior. Institutions benefit from Institutions benefit from...

17/3,K/12 (Item 2 from file: 139)
DIALOG(R)File 139:EconLit

696378
TITLE: Optimal Labor Contracts and the Role of Monetary Policy in an Overlapping Generations Model
AUTHOR(S): Cooper, Russell
AUTHOR(S) AFFILIATION: Cowles Foundation, Yale University
PUBLICATION INFORMATION: Cowles Foundation, Yale University, Cowles Foundation Discussion Papers: 656R PAGES: 26 pages
PUBLICATION DATE: 1984
AVAILABILTY: http://cowles.econ.yale.edu/P/cd/d06b/d0656-r.pdf; http://cowles.econ.yale.edu/P/cd/d06b/d0656-r.ps; http://cowles.econ.yale.edu/P/cd/d06b/d0656-r.tif
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

...ABSTRACT: and nominal shocks. In an overlapping generations model, we compare alternative means of trading labor **services** : **spot markets** , fixed nominal wage contracts and **price** -contingent contracts. The ordering of these market structures will depend on the relative variability of the real and nominal shocks and the **costs** of contingent contracts. We also investigate the role of monetary policy and the circumstances under...

17/3,K/13 (Item 3 from file: 139)
DIALOG(R)File 139:EconLit

695599
TITLE: Stock-Returns and Inflation in a Principal-Agent Economy
AUTHOR(S): Jovanovic, B.; Ueda, M.
AUTHOR(S) AFFILIATION: Unlisted; Unlisted
PUBLICATION INFORMATION: C.V. Starr Center for Applied Economics, New York University, Working Papers PAGES: 26 pages
PUBLICATION DATE: 1998
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

ABSTRACT: We study a monetary in which final **goods** sell on **spot markets** , while labor and dividends sell through contracts. Firms and workers confuse absolute and relative **price** changes: A positive **price** -level shock makes sellers think they are producing better **goods** than they really are. They split this apparent windfall with workers who get a higher...

17/3,K/14 (Item 4 from file: 139)
DIALOG(R)File 139:EconLit

685264
TITLE: Why We Need Electricity Retailers: A Reply to Joskow on Wholesale Spot Price pass-through
AUTHOR(S): Littlechild, Stephen C.
AUTHOR(S) AFFILIATION: Unlisted
PUBLICATION INFORMATION: Department of Applied Economics, University of Cambridge, Cambridge Working Papers in Economics
PUBLICATION DATE: 2000
AVAILABILTY:
http://www.econ.cam.ac.uk/dae/repec/cam/pdf/wp0008.pdf">URL
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

...ABSTRACT: markets, distribution utilities should be required to enable residential customers to buy at (averaged) wholesale **spot market prices** . They argue that retail electricity competitors should concentrate on value-added **services** rather than **price** competition. However, they have not acknowledged the importance of retail **price** competition, neglected the role of contract markets, and underestimated the costs and disadvantages of this...

17/3,K/15 (Item 5 from file: 139)
DIALOG(R)File 139:EconLit

684225
TITLE: On the Stability of Intertemporal Equilibria with Rational Expectations
AUTHOR(S): Hens, Thorsten
AUTHOR(S) AFFILIATION: Unlisted
PUBLICATION INFORMATION: University of Bonn, Germany, Discussion Paper Serie A
PUBLICATION DATE: 1994
AVAILABILTY: <a
href="ftp://ftp.wipol.uni-bonn.de/pub/RePEc/bon/bonsfa/bonsfa465.ps">URL
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

...ABSTRACT: Paper we propose a concept of stability for intertemporal equilibria with rational expectations: current period **prices** move proportionally to current period excess demand while future **prices** are formed according to the perfect foresight hypothesis. It is shown that this process is locally asymptotically stable if all **goods** are gross substitutes, or if the equilibrium has no trade. In general this process differs from a tOtonnement in asset and **spot market prices** . It also differs from Hicks' and exceptional stability. In an

intertemporal variant of Scarf's...

17/3,K/16 (Item 6 from file: 139)
DIALOG(R)File 139:EconLit

627713
TITLE: Does Index Futures Dominate Index Spot? Evidence from Taiwan Market
AUTHOR(S): Lin, Ching-Chung, et al.
AUTHOR(S) AFFILIATION: National Cheng Kung U and Kao-Yuan Institute of Technology
JOURNAL NAME: Review of Pacific Basin Financial Markets and Policies,
JOURNAL VOLUME & ISSUE: 5 2,
PAGES: 255-75
PUBLICATION DATE: 2002
AVAILABILTY: http://journals.wspc.com.sg/rpbfmp/rpbfmp.shtml Publisher's URL
ISSN: 0129-0915
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: uses 5-minute intraday data to examine the interaction of return and volatility between Taiwan **Stock** Exchange Capitalization Weighted **Stock** Index (TAIEX) and the newly introduced TAIEX futures. VECM model shows that there exists bi-directional Granger causality between index spot and index futures markets, but **spot market** plays a more important role in **price** discovery. The results of impulse response function and information share indicate that most of the...

17/3,K/17 (Item 7 from file: 139)
DIALOG(R)File 139:EconLit

598843
TITLE: One Region, One Money?
AUTHOR(S): von Furstenberg, George M.
AUTHOR(S) AFFILIATION: IN U and Fordham U
JOURNAL NAME: Annals of the American Academy of Political and Social Science,
JOURNAL VOLUME & ISSUE: 579 0,
PAGES: 106-22
PUBLICATION DATE: 2002
AVAILABILTY: http://www.sagepub.co.uk/journal.aspx?pid=105472 Publisher's URL
ISSN: 0002-7162
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: economic globalization, and the information and communications technology revolution. Freer cross-border provision of financial **services** and a changed official attitude to foreign establishment and takeovers have encouraged foreign entry. Many regional and global electronic **spot markets** and electronic trading platforms **price** in U.S. dollars or, prospectively, in euro. Cross-border e-banking, e-investing, and...

17/3,K/18 (Item 8 from file: 139)
DIALOG(R)File 139:EconLit

589326
TITLE: Lifting the Alaskan Oil Export Ban: An Intervention Analysis
AUTHOR(S): Bausell, Charles W., Jr.; Rusco, Frank W.; Walls, W. David
AUTHOR(S) AFFILIATION: Center for Econ, US General Accounting Office; Center for Econ, US General Accounting Office; U Calgary
JOURNAL NAME: Energy Journal,
JOURNAL VOLUME & ISSUE: 22 4,
PAGES: 81-94
PUBLICATION DATE: 2001

AVAILABILTY: <a
href="http://www.iaee.org/en/publications/journal.aspx">Publisher's
URL
ISSN: 0195-6574
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: the use of a time series intervention analysis. The results indicate that Alaskan crude oil **prices** increased between $0.98 and $1.30 on the West Coast **spot** **market** relative to **prices** of comparable crude oils as a result of removing the export ban. However, we find no evidence that West Coast **prices** for refined oil **products** --regular unleaded gasoline, diesel fuel, and jet fuel--increased as a result of lifting the...

17/3,K/19 (Item 9 from file: 139)
DIALOG(R)File 139:EconLit

575081
TITLE: **Le gaz naturel en Europe: Emergence de marches spot et Trading hubs. (Natural Gas in Europe: Emergence of Spot Markets and Trading Hubs. With English summary.)**
AUTHOR(S): Heyvaert, G.
AUTHOR(S) AFFILIATION: Distrigaz Belgique
JOURNAL NAME: Economies et Societes,
JOURNAL VOLUME & ISSUE: 35 1-2,
PAGES: 235-46
PUBLICATION DATE: 2001
AVAILABILTY: <A HREF="http://www.ismea.org/ISMEA/ecosoc.html">Publisher's URL</A>
ISSN: 0013-0567
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: evolution is stimulated by the liberalization of the gas industry. Trading hubs emerge and propose **services** that support short term transactions. In parallel with long term contracts, a **spot** **market** is emerging with the associated futures markets. As soon as market liquidity is there, **prices** signals given by **spot** **markets** to be taken in account for the determination of long term contracts.

17/3,K/20 (Item 10 from file: 139)
DIALOG(R)File 139:EconLit

492190
TITLE: **A Net Present Value Approach to Safety Stocks in a Multi-level MRP System**
AUTHOR(S): Grubbstrom, Robert W.
AUTHOR(S) AFFILIATION: Linkoping Institute of Technology
JOURNAL NAME: International Journal of Production Economics,
JOURNAL VOLUME & ISSUE: 59 1-3,
PAGES: 361-75
PUBLICATION DATE: 1999
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505647/description#description
ISSN: 0925-5273
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: made the analysis compact and distinct. In the current paper the analysis of determining optimal **safety** **stock** **levels** in MRP systems is extended from a single-level model recently investigated to a multi...

17/3,K/21 (Item 11 from file: 139)
DIALOG(R)File 139:EconLit

491484
TITLE: Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production
AUTHOR(S): Key, Nigel; Runsten, David
AUTHOR(S) AFFILIATION: Stanford U; Stanford U
JOURNAL NAME: World Development,
JOURNAL VOLUME & ISSUE: 27 2,
PAGES: 381-401
PUBLICATION DATE: 1999
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/386/description#description
ISSN: 0305-750X
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: the scale of outgrower production in Latin America. We outline how market imperfections and transaction **costs** influence the decision of agroprocessing firms to contract-out, vertically integrate, or use **spot markets** to obtain raw **product** . The paper demonstrates how market conditions are likely to be associated with particular outgrower characteristics...

17/3,K/22 (Item 12 from file: 139)
DIALOG(R)File 139:EconLit

481863
TITLE: A Net Present Value Approach to Safety Stocks in Planned Production
AUTHOR(S): Grubbstrom, Robert W.
AUTHOR(S) AFFILIATION: Linkoping Institute of Technology
JOURNAL NAME: International Journal of Production Economics,
JOURNAL VOLUME & ISSUE: 56-57 0,
PAGES: 213-29
PUBLICATION DATE: 1998
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505647/description#description
ISSN: 0925-5273
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: the analysis concise and distinct. In this paper we extend the analysis of determining optimal **safety stock levels** for a sequence of planned production decisions (a one-level MRP system) by applying the...

17/3,K/23 (Item 13 from file: 139)
DIALOG(R)File 139:EconLit

474195
TITLE: Cointegration of South African Index Futures Contracts and Their Underlying Spot Market Indices
AUTHOR(S): Ferret, A.; Page, M. J.
AUTHOR(S) AFFILIATION: U Cape Town; U Cape Town
JOURNAL NAME: Journal for Studies in Economics and Econometrics,
JOURNAL VOLUME & ISSUE: 22 1,
PAGES: 69-90
PUBLICATION DATE: 1998
ISSN: 0379-6205
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: markets should be perfectly contemporaneously correlated. Any evidence of a lead-lag relationship between spot **prices** and futures **prices** therefore provides insight into the relative informational efficiency of the market. The paper provides evidence that the JSE **stock** index future contracts are cointegrated with the **spot market** . Fitted error correction models find that the **stock** index futures

price changes lead those of the underlying spot index by up to three days in reflecting...

17/3,K/24 (Item 14 from file: 139)
DIALOG(R)File 139:EconLit

428014
TITLE: A Step-Wise Method for Product Range Management and Production Control Decisions: A Case Study At a Board Industry Company
AUTHOR(S): Pirttila, Timo; Sandstrom, Robert
AUTHOR(S) AFFILIATION: Lappeenranta U Technology; Kymmene Logistics Oy, Lappeenranta
JOURNAL NAME: International Journal of Production Economics,
JOURNAL VOLUME & ISSUE: 45 1-3,
PAGES: 223-30
PUBLICATION DATE: 1996
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505647/description#description
ISSN: 0925-5273
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: production would become more flexible. Also, the results of the analysis indicated that if new safety stock levels for make-to-stock products were set, the current total stock level could be reduced...

17/3,K/25 (Item 15 from file: 139)
DIALOG(R)File 139:EconLit

427979
TITLE: An Analytical Comparison of Inventory Costs between the Pull and the Parts-Oriented Production Systems
AUTHOR(S): Miyazaki, Shigeji
AUTHOR(S) AFFILIATION: Okayama U
JOURNAL NAME: International Journal of Production Economics,
JOURNAL VOLUME & ISSUE: 44 1-2,
PAGES: 151-57
PUBLICATION DATE: 1996
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505647/description#description
ISSN: 0925-5273
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: costs under the larger variation of parts demand, the larger production stages and the higher safety stock level . The merit of pull system increases as the variation of parts demand and the safety stock level decreases, respectively, which have been treated as management goals of Toyota Production System (a typical...

17/3,K/26 (Item 16 from file: 139)
DIALOG(R)File 139:EconLit

423871
TITLE: Stability of Tatonnement Processes of Short Period Equilibria with Rational Expectations
AUTHOR(S): Hens, Thorsten
AUTHOR(S) AFFILIATION: U Bielefeld
JOURNAL NAME: Journal of Mathematical Economics,
JOURNAL VOLUME & ISSUE: 28 1,
PAGES: 41-67
PUBLICATION DATE: 1997
AVAILABILTY: http://www.elsevier.com/wps/find/journaldescription.cws home/505577/description#description
ISSN: 0304-4068

DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: we propose a new tatonnement process of short-period equilibria with rational expectations: current period **prices** move proportionally to current period excess demand while future **prices** are formed according to the perfect foresight hypothesis. It is shown that this process is locally asymptotically stable if all **goods** are gross substitutes, or if the equilibrium has no trade. In general this process differs from a tatonnement process in contingent contracts **prices** and from a tatonnement in asset and **spot market prices** . It also differs from Hicks' and exceptional stability. In an intertemporal variant of Scarf's...

17/3,K/27 (Item 17 from file: 139)
DIALOG(R)File 139:EconLit

397388
TITLE: Intertemporal Nonseparability or Borrowing Restrictions? A Disaggregate Analysis Using a U.S. Consumption Panel
AUTHOR(S): Meghir, Costas; Weber, Guglielmo
AUTHOR(S) AFFILIATION: U College London and IFS; U Padova, IFS and CEPR
JOURNAL NAME: Econometrica,
JOURNAL VOLUME & ISSUE: 64 5,
PAGES: 1151-81
PUBLICATION DATE: 1996
AVAILABILTY: http://www.econometricsociety.org
ISSN: 0012-9682
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: marginal rate of substitution condition as a benchmark to evaluate the intertemporal Euler equation. If **spot markets** for nondurable **goods** exist but financial markets are imperfect, the comparison of first-order conditions involving the relevant spot and intertemporal **prices** can be used to detect the imperfection. The authors apply their methodology to a large...

17/3,K/28 (Item 18 from file: 139)
DIALOG(R)File 139:EconLit

389766
TITLE: Primary and Secondary Producers: Economic Implications of Contracts in the Food Marketing Chain
AUTHOR(S): Andersson, Hans
AUTHOR(S) AFFILIATION: Swedish U Agricultural Sciences
JOURNAL NAME: European Review of Agricultural Economics,
JOURNAL VOLUME & ISSUE: 22 3,
PAGES: 310-20
PUBLICATION DATE: 1995
ISSN: 0165-1587
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: is an extension of Holthausen's result (1979). The model design considers various degrees of **price** -risk exposure for raw **material** and processed **products** , risk preferences and technology parameters. The optimal contract is endogenously determined and shown to be a function of technology parameters, factor **prices** , risk measures in the **spot markets** and risk preferences of the parties involved.

17/3,K/29 (Item 19 from file: 139)
DIALOG(R)File 139:EconLit

274886

TITLE: Regulation with "20-20 Hindsight": Least-Cost Rules and Variable Costs
AUTHOR(S): Lyon, Thomas P.
AUTHOR(S) AFFILIATION: IN U
JOURNAL NAME: Journal of Industrial Economics,
JOURNAL VOLUME & ISSUE: 40 3,
PAGES: 277-89
PUBLICATION DATE: September 1992
ISSN: 0022-1821
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: contracts for variable factors in a regime with profit regulation, the firm increases its capital **stock** and relies more heavily on **spot** **market** purchases for its variable inputs; the firm's profits are reduced, but welfare effects on consumers are ambiguous. If applied as a type of "stochastic **price** cap" regulation, however, hindsight review can induce variable input choices that minimize expected costs.

17/3,K/30 (Item 20 from file: 139)
DIALOG(R)File 139:EconLit

272803
TITLE: Fundamentals of petroleum trading
AUTHOR(S): Razavi, Hossein; Fesharaki, Fereidun
PUBLICATION INFORMATION: Westport, Conn. and London: Greenwood, Praeger,
PAGES: x, 222
PUBLICATION DATE: 1991
ISBN: 0-275-93920-0
DOCUMENT TYPE: Book
ABSTRACT INDICATOR: Abstract

...ABSTRACT: of petroleum futures markets and options trading. Examines the impact of futures trading on petroleum **stock** movements and explores the interactions between futures trading and the **spot** **market** **price** . Discusses **price** -charting techniques used by traders predicting futures **prices** and presents examples of their application to petroleum futures. Examines the nature of the interaction...

17/3,K/31 (Item 21 from file: 139)
DIALOG(R)File 139:EconLit

229286
TITLE: Day-of-the-Week Patterns in Futures Prices: Some Further Results
AUTHOR(S): Chamberlain, Trevor W.; Cheung, C. Sherman; Kwan, Clarence C. Y.
AUTHOR(S) AFFILIATION: McMaster U; McMaster U; McMaster U
JOURNAL NAME: Quarterly Journal of Business and Economics,
JOURNAL VOLUME & ISSUE: 29 2,
PAGES: 68-88
PUBLICATION DATE: Spring 1990
ISSN: 0747-5535
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

ABSTRACT: This paper describes the results of an investigation into the daily **price** change behavior of the New York **Stock** Exchange composite index and its futures contracts. Although a strong nontrading period weekend effect is found to persist in the **spot** **market** during the Friday close to Monday open period, the evidence on the presence of a...

17/3,K/32 (Item 22 from file: 139)
DIALOG(R)File 139:EconLit

227992
TITLE: Estimating the Cost of Switching Rights on Natural Gas Pipelines
AUTHOR(S): Graves, Frank C.; Read, James A., Jr.; Carpenter, Paul R.
AUTHOR(S) AFFILIATION: Incentives Res Inc; Incentives Res Inc; Incentives Res Inc
JOURNAL NAME: Energy Journal,
JOURNAL VOLUME & ISSUE: 10 4,
PAGES: 59-81
PUBLICATION DATE: October 1989
ISSN: 0195-6574
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

ABSTRACT: This paper is about the **pricing** of contingent **services** . The immediate problem is this: What is the **cost** of the right to choose among pipeline and **spot** **market** purchases of natural gas? Changes in the regulation of natural gas pipelines created these rights...

17/3,K/33 **(Item 23 from file: 139)**
DIALOG(R)File 139:EconLit

212783
TITLE: Labor Contracts and the Role of Monetary Policy in an Overlapping Generations Model
AUTHOR(S): Cooper, Russell
JOURNAL NAME: Journal of Economic Theory,
JOURNAL VOLUME & ISSUE: 44 2,
PAGES: 231-50
PUBLICATION DATE: April 1988
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: and nominal s hocks. In this environment, the author compares alternative means of trading labor **services** : **spot** markets , fixed nominal wage contracts, a nd **price** -contingent contracts. The welfare ordering of these market s tructures is shown to depend on the relative variability of the real and nominal shocks and the **costs** of contingent contracts. The paper a lso investigates the role of monetary policy and the...
?

? t 01789875/7

01789875 04-40866
Uses and consequences of electronic markets: An empirical investigation in the aircraft parts industry
Choudhury, Vivek; Hartzel, Kathleen S; Konsynski, Benn R
MIS Quarterly v22n4 PP: 471-507 Dec 1998 CODEN: MISQDP ISSN: 0276-7783
JRNL CODE: MIS
DOC TYPE: Journal article LANGUAGE: English LENGTH: 37 Pages
WORD COUNT: 16910

ABSTRACT: An electronic market is an interorganizational information system through which multiple buyers and sellers interact to accomplish one or more of the following market-making activities: 1. identifying potential trading partners, 2. selecting a specific partner, and 3. executing the transaction. It has been suggested that electronic markets, by lowering search costs, may lead to significantly increased price competition among sellers and, hence, lower prices for buyers. Or, by allowing efficient, direct interaction between buyers and sellers, they may eliminate the role of intermediaries. The validity of these arguments is examined in the context of one electronic market: Inventory Locator Service in the aircraft parts industry.
TEXT: Headnote:

Uses and Consequences of Electronic Markets: An Empirical Investigation in the Aircraft Parts Industry*

Headnote:

Abstract

An electronic market is an interorganizational information system through which multiple buyers and sellers interact to accomplish one or more of the following market-making activities: (1) identifying potential trading partners, (2) selecting a specific partner, and (3) executing the transaction. It has been suggested that electronic markets, by lowering search costs, may lead to significantly increased price competition among sellers and hence, lower prices for buyers. Or, by allowing efficient, direct interaction between buyers and sellers, they may eliminate the role of intermediaries. Little evidence exists to support the claims. This paper empirically examines the validity of these arguments in the context of one electronic market: Inventory Locator Service (ILS) in the aircraft parts industry.
Specifically, the paper addresses two questions: When do buyers use an electronic market? How do electronic markets affect each of the following: prices, inventory levels, and the role of brokers? The data show that current models do not adequately capture the complexity of electronic markets. For instance, while ILS sometimes helps buyers find a better price, in other cases it can help suppliers extract an extra premium by providing more accurate information on parts availability. ILS has also had little impact on the extent to which brokers are used, although the specific nature of the value added by brokers appears to be changing. Finally, inventory levels in the industry have been unaffected by the use of ILS.

The scope of ILS is limited to the identification process only, so caution must be exercised in generalizing the findings to systems that also support selection and execution. However, the data do suggest additional variables that must be considered in understanding the uses and impacts of electronic markets, including the scope of the electronic market.

Keywords: Interorganizational information systems, electronic markets, aircraft parts industry

Introduction
An increasingly important application of information technology is the electronic market. An electronic market is defined as "an inter-organizational information system that allows the participating

buyers and sellers in some market to exchange information about prices and product offerings" (Bakos 1997, p. 1676). It has also been defined as an electronic intermediary over which multiple buyers and sellers do business (Malone et al. 1987). Examples include airline reservation systems (CRSs) such as SABRE and APOLLO (Copeland and McKenney 1988); American Gem Market System (HBS 1988) in the precious stones industry; and TELCOT in the cotton industry (Lindsey et al. 1990).

The primary benefit offered by an electronic market is efficient market search, or electronic brokerage (Malone et al. 1987). Projected impacts of these lower search costs include disintermediation in the marketing channel and commoditization of the market, resulting in sharply heightened price competition (Bakos 1991, 1997; Malone et al. 1987). However, little empirical evidence exists to support the claims. Yet, as the Internet raises the possibility of an explosive growth in the use of electronic markets, it is important that we move beyond the theory to gather empirical evidence that helps us truly understand the uses and impacts of these systems.
Given the preliminary state of current knowledge and evidence on the impacts of such systems, the belief expressed in this paper is that the appropriate strategy for gathering empirical evidence is not a broad-based survey but rather in-depth studies of multiple electronic markets. The underlying premise in advocating this approach is that the use and impacts of electronic markets may be influenced by transaction and system attributes that have not been identified in the literature to date. First, a cumulative body of case evidence that helps identify these variables needs to be built. This paper takes a first step toward that objective with a study of one electronic market: Inventory Locator Service (ILS) in the aircraft parts industry.

The data confirm expectations. A number of factors beyond those discussed in the current literature influence how buyers use ILS and the resulting impacts. But a study of a single electronic market raises questions of external validity and generalizability, and the extent to which the observations are applicable to a broader population of electronic markets beyond ILS. As has been noted, however, the appropriate logic for case studies is not statistical generalization-as in sampling, where the results are generalized to a larger populationbut analytical generalization, where the researcher is trying to generalize a particular set of results to a broader theory (Yin 1984). This is consistent with the objective in this paper of refining existing theory, based on empirical evidence. Thus, the observations in the aircraft parts industry are drawn upon to identify a set of generic factors-that is, excluding those that appear to be specific to the aircraft parts industry-that should be included in a broader theory of the use and impacts of electronic markets. The model must, of course, be subjected to further empirical validation, but should be a useful starting point for future studies on the subject.

The paper begins by defining an electronic market. Next, the research questions are presented, along with a preliminary research model and a set of propositions. The aircraft parts industry, Inventory Locator Service, and the method used for collecting data are described. The results are presented, discussed, and used to refine the preliminary research model. The paper concludes with some implications and suggestions for further research.

What Are Electronic Markets?

A key attribute of an electronic market, as emphasized in the definitions presented above (Bakos forthcoming; Malone et al. 1987), is that it is a single interorganizational information system (IOIS) that links multiple buyers and sellers (Figure 1). As a result, a buyer (seller) needs to establish just a single link to the electronic market to exchange information and/or transact with the large, potentially unlimited number of sellers (buyers) who also subscribe to the system. Further, in an electronic market, individual buyers (sellers) do not select which sellers (buyers) or other buyers (sellers) also have access to the system. This is done by the entity implementing and operating the electronic market, who may be a player in the industry-a buyer, seller, or intermediary-or a professional market maker. An electronic market is characterized as a multilateral IOIS to distinguish it from bilateral IOISs, such as EDI links, where a firm establishes individual electronic links with each of a

select set of trading partners (Choudhury 1997).

In addition, an electronic market supports one or more of the following market-making functions.

Identification: All electronic markets include the capability of helping a firm identify a set of potential trading partners for a transaction. To support identification, an electronic market needs only to include product information that buyers can search to locate a set of sellers for a specific product(s). For instance, a prospective flyer can use SABRE to find all available flights to a destination. Bargain Finder, an intelligent agent that creates an electronic market for music CDs on the World Wide Web (http://bf.cstar.ac.com/bf) (Krulwich no date), allows a buyer to type in the title of a CD to get a list of Web-based sellers offering that CD. For a seller, listing a product on an electronic market is an efficient way to reach a large group of prospective buyers. For example, any subscriber to Centrox, an electronic market for artwork (Brown 1991), can list a work of art that he/she wishes to sell, thereby reaching a large number of targeted, prospective buyers (the other subscribers).

Selection: An electronic market that supports selection also provides access to price information and allows buyers to compare prices without having to contact each seller individually. Thus, with SABRE, a flyer can not only retrieve flight schedules and availability but also compare fares across airlines. Bargain Finder displays not just the list of sellers carrying a CD but also their prices (with some exceptions). A variation on this is a class of systems that have become particularly popular with the emergence of the Internet: auction-oriented electronic markets that allow sellers to compare bids from multiple buyers. On electronic auction systems, sellers list products for sale, but not prices, and then solicit and compare bids from buyers electronically. Examples of such electronic auction systems include AUCNET, for the sale of used cars in Japan (HBS 1989); Tele Flower Auction, an electronic auction system in the Dutch Flower Market (Kambil and Heck 1996); and AuctionWeb, a web-based system (http://www.ebay.com/aw) that allows a seller to list a product and solicit bids from buyers over a fixed period of time.

Some electronic markets do not support direct price comparisons but provide market intelligence that helps buyers and sellers be more informed negotiators. For instance, Centrox includes a database of auction results on all major paintings and sculpture sold at 172 auction houses. SportsNet, an electronic market for sports cards, includes reports of daily fluctuations in prices to help subscribers determine the value of cards before buying or selling (Roush 1994). On Fastparts Plus (www.fastparts.com), a market for electronic components, buyers and sellers can exchange bids and counter-bids directly over the system until they agree on a price.

Execution: Finally, an electronic market may also facilitate the execution of the transaction by supporting the exchange of the necessary information between buyer and seller. For instance, SABRE allows flyers not only to view and compare flights, but also to make reservations and pay. On the other hand, with Bargain Finder, a buyer must visit an individual seller's web site to place an order, he/she cannot do so directly through Bargain Finder.
It is important to emphasize that an lOIS does not need to support all of these functions to qualify as an electronic market. This is consistent with the previous literature: for instance, a distinction is made between electronic markets that provide just product information, thereby supporting just identification, and those that also include prices, thereby also supporting selection (Bakos 1991). Similarly, in practice, electronic markets vary considerably in the range of functions that they support (hereafter referred to as the "scope of the electronic market"Table 1). Summarizing:

An electronic market is an interorganizational information system through which multiple buyers and sellers interact to accomplish one or more of the following market-making activities: (1) identifying potential trading partners, (2) selecting a specific partner, and (3) executing the transaction.

The above definition emphasizes the features that distinguish an electronic

market from other IOISs. In addition, it should be noted that to the extent it is, in fact, a "market," an electronic market is more than just an IOIS: it is also the institutional framework governing exchange among subscribers.

Research Questions

The following two sets of questions are addressed in this paper.

(Chart Omitted)

Captioned as: Figure 1.

When do buyers use an electronic market?

It has been argued that for products that are low in asset specificity and complexity of description, buyers will choose electronic markets; for products high on these two dimensions, buyers will choose electronic hierarchies (Malone et al. 1987). A study of the insurance industry found some support for this idea. The degree of hierarchical, electronic integration was directly related to the level of asset specificity (Zaheer and Venkatraman 1994). Thus, the following proposition:

Proposition 1: Buyers will use electronic markets for the purchase of products that are low in asset specificity and complexity of description.

It should be noted that there is some contrary evidence already in the literature. For instance, in the chemical industry, hierarchies were found to be the primary channel for purchasing despite the fact that most chemicals are commodities and would be easy to describe in an electronic market (Rosenmthal et al. 1993). A study of the mortgage industry found that the availability of an electronic market does not necessarily lead to its successful adoption (Hess and Kemerer 1994). The electronic markets in that study no longer exist in that form today, having evolved into more hierarchical structures. While these studies suggest that the factors in proposition 1 may not be complete, neither of them explicitly identifies the specific conditions under which buyers do use electronic markets because both studies analyzed unsuccessful electronic markets. In this paper, a successful electronic market is studied to begin the process of identifying the transaction characteristics that motivate the adoption and use of such systems.

What impacts do electronic markets have on each of the following?

Prices: A number of factors are important in determining optimum buyer search behavior, such as the heterogeneity of consumers and product offerings, market structure, and whether or not the buyer knows the distribution of prices (Reinganum 1979; Shilony 1977). A key consideration, however, is the cost of search. High search costs enable sellers to extract monopolistic rents in otherwise competitive markets by pricing products substantially higher than their marginal costs (Diamond 1985; Stiglitz 1989). In general, therefore, lowering search costs with an electronic market (Bakos 1991, 1997; Malone et al. 1987) should allow buyers to search the market more extensively, reduce sellers' ability to obtain monopolistic profits, increase competition, and lower prices.

The impact of an electronic market on prices depends on two factors (Bakos 1997): (1) scope of the electronic market: an electronic market that supports both identification and selection will usually have a greater impact on prices than an electronic market that supports identification only, and (2) product differentiation: electronic markets are more likely to lower prices in commodity markets than in highly differentiated markets.

(Table Omitted)

Captioned as: Table 1

To understand why, it is useful to consider a buyer's search process as consisting of two logically' distinct phases. In the first phase, the buyer uses the electronic market to search for product information, that is, to find the set of sellers offering products that match the buyer's criteria. All electronic markets, including those that support just identification, reduce a buyer's search costs of finding product information. In the second

phase, the buyer must then decide for how many of the sellers he/she is going to compare prices. This depends on the two factors noted above.

In a commodity market, all the sellers revealed through the initial search carry identical products. The buyer's objective, therefore, is to find the best possible price by comparing prices from as many of these sellers as is efficient. If the electronic market supports selection with access to price information, the buyer can, in fact, compare prices for all of the sellers at virtually no additional search cost. This puts considerable downward pressure on prices. Such an electronic market

will sway equilibria in commodity markets to favor the buyers, will promote competition among sellers, and will reduce sellers' market power. . . instigate price wars that wipe out any excess profits enjoyed by the sellers (Bakos 1997, p. 1677).

If the electronic market does not support selection, the buyer must incur a positive marginal search cost to obtain price information manually from each seller. In this case, the buyer is less likely to request prices from each seller revealed in the initial search. However, the buyer should still be able to compare prices from a greater number of sellers than without an electronic market because he/she can now focus all the search dollars on comparing prices from a set of sellers known to have the product. Without an electronic market, more of the buyer's search dollars would be expended on searching for product information, that is, to find sellers with the desired product. Thus, buyers should be able to lower prices for commodity purchases even if the electronic market does not support selection.

In a differentiated market, on the other hand, the buyer's primary objective is more likely to be to find the seller with the best product fit and minimize the "product fit costs" that the buyer must incur if he/she purchases from some other seller. If the electronic market does not include prices, the buyer will begin by manually obtaining price information from the seller with the best product fit.2 If this seller's price is higher than the buyer is willing or able to pay, the buyer will move on to the seller with the next best product fit until he/she finds one with the right combination of product fit and price. This is not much different from a manual search process. Sellers can continue to charge a premium equal to the value of the better product fit plus the buyer's search cost of contacting an additional seller. Thus, a minimal impact on prices is expected; the primary benefit to the buyer is that the electronic market increases the chances of finding the seller with the best product fit. With a differentiated electronic market that includes price information, the buyer will still begin by evaluating the seller with the best product fit. However, in this case, the buyer can also compare prices at no additional search cost and judge if the seller with the best fit is charging a premium higher than the value of the better product fit. That is, sellers will no longer be able to charge a premium for the search costs, only for the better product fit. Thus, prices should be lowered.

Summarizing the above discussion, the following hypothesis, which is consistent with earlier predictions in the literature (Bakos 1997), is proposed.

Proposition 2: Electronic markets will lower prices (1) in commodity markets and (2) in markets with differentiated products if the system supports selection with price information. Electronic markets will not lower prices if the market is differentiated and the system supports only identification with product information.

Role of brokers: One reason buyers use brokers is that they offer search economies.

The presence of the broker substantially reduces the need for buyers and suppliers to contact a large number of alternative partners individually. The electronic brokerage effect simply means that electronic markets, by electronically connecting many different buyers and suppliers through a central data base, can fulfill this same function (Malone et al. 1987, p. 488).

In addition, an electronic market should be both (1) more effective in allowing a buyer to reach a larger number of suppliers than a traditional

broker and (2) more efficient in comparing product offerings. Buyers would therefore be expected to use electronic markets to reduce the extent to which they use brokers and transact directly with the sellers.

Proposition 3: Electronic markets will reduce the extent of usage of brokers by buyers.

Inventory levels: The logic for examining this variable is based on standard models of economic order quantities and reorder points (Ballou 1992). The economic order quantity, and hence the average inventory holding, for an item depends partly on the ordering costs:3 to the extent that an electronic market can lower these costs, the economic order quantity and average inventory levels should also be lowered. The ordering costs, in turn, are the sum of the search costs for product and price information as well as the transaction execution costs. Thus, an electronic market that supports all three market-making phases should lower all aspects of the ordering costs and should have a greater impact on inventory levels than a system that supports, for instance, identification only.

In addition, under assumptions of uncertainty in demand and in lead times, firms must maintain buffer stocks that are a function of both the length and variability of the expected lead times. Electronic markets should make it easier and faster for buyers to locate suppliers, thereby lowering the lead times, and also increase the probability that a buyer will be able to locate a supplier who has the needed part in stock, thereby lowering the uncertainty in the lead times. The net effect should, therefore, be a reduction in the buffer stocks and hence lower average inventory levels.

Proposition 4: Electronic markets will lower the inventory levels maintained by buyers.

The above discussion is summarized in the preliminary research model in Figure 2. Note that the focus in this paper is exclusively on the buyer's perspective. This is not to suggest that electronic markets do not affect sellers, merely that the scope of this paper needed to be limited to keep it manageable.

Method

Inventory Locator Service (ILS) and the aircraft parts industry were chosen as the subject of the study because, based on published literature (HBS 1990), the researchers were aware that ILS had been in existence for a substantial length of time and had a broad base of usage among firms in the industry. As a result, it was felt that the system would be well incorporated into the purchasing behavior of buyers and any impacts would have had a chance to manifest themselves. That is, we would be observing stable, and not transient, behavior. Data for the study was collected in two phases: interviews and a survey.

Interviews

In-depth interviews were conducted with a number of individuals to gain an overall understanding of the industry and when and how firms use ILS. To obtain the names of people to interview, the president of ILS was asked for the names of ILS users in the geographical areas where the researchers live, so that the interviews could be conveniently conducted. A list of two dozen contacts, including buyers, OEMs, brokers, and repair shops, was provided. Of these, eight agreed to interviews, including three buyers, two OEMs, a government procurement agency, a broker/distributor, and a repair shop/broker.

In addition, a representative of the Air Transport Association (ATA), a trade association of major airlines around the world, was interviewed, primarily to gain a general understanding of the industry used as the basis for the other interviews, as well as the president of ILS, to enhance understanding of the features and evolution of ILS. In this paper, the interviews with the OEMs are not used because they make minimal use of ILS and because the focus is on the buyer's perspective. The government agency was also dropped because its use of ILS is influenced by a number of unique requirements that are not applicable to nongovernment buyers. Thus, the results reported in this paper are based on interviews with the ATA representative, the president of ILS, and the set of buyers and brokers described in Table 2.

Each individual was interviewed between one and three times, with each interview lasting one to four hours, for a total of approximately 25 hours of interviews (counting only those used in this paper). Although the interviews were largely open-ended, all of the interviewees were asked a set of basic questions (Appendix A). These questions are broad and open-ended because the objective was to understand process, not just obtain numbers. Additional questions were used to follow up to the responses to these basic questions.

Survey

A survey (Appendix B) was then designed and administered to 120 airlines around the world. While airlines are certainly not the only buyers in the industry, as a group, they represent, by far, the most stable and the highest volume buyers, and there is no reason to believe that their purchasing habits are unique. In addition, given the highly fragmented nature of the rest of the buying population, airlines are the most easily identifiable in terms of obtaining a list to administer the survey.

The names of the airlines were obtained from two sources: Air Transport Association (ATA, 72 airlines) and Regional Airline Association (RAA, 48 airlines), a trade association of smaller regional airlines in the USA. Of the addressees on the list from the ATA, 75% had job titles in the purchasing/materials management function.4 The others on the ATA list and on the list from the RAA typically had broader titles such as general manager, maintenance manager, or managing director. In a cover letter, recipients were asked to forward the surveys to the individuals with primary responsibility for the purchase of parts (unless the recipient himself/herself had this responsibility). Although the responses were anonymous, 19 respondents included their business cards (for a copy of the results). All of the job titles but one (marketing manager-from an airline that does not subscribe to ILS) were consistent with primary, or at least significant, responsibility for the purchase of parts.

A total of 30 responses were received, for a response rate of 25%. Unfortunately, we were not able to do follow up mailings to try to increase the response rate because only one copy of the mailing list was provided with the implicit understanding that it would not be duplicated for additional mailings. Seventeen of the respondents use ILS. While the population and sample size are small, they should adequately serve the purpose of complementing and verifying the interview results.

The respondents' fleet sizes range from five planes to 431 planes. This paper uses the number of purchase orders as a measure of the size of an airline because it is the most direct and accurate indicator of an airline's transaction volume.5 The median annual number of purchase orders for the airlines in the sample is approximately 15,000 (Table 3), with a low of 1,000 and a high of 190,000. Therefore, 15,000 purchase orders is used as the dividing line between larger and smaller airlines. This same break point is also used to classify the three buyers in the interviews: the airline has more than 15,000 orders, while the package delivery company and the FBO have fewer than 15,000.

The survey had some methodological limitations that should be noted. First, it was based on perceptual rather than objective measures and required respondents to recall retrospective data. Ideally, for a truly objective test of the propositions, detailed information on purchase orders, including which ones were placed after a search of ILS and which ones were brokered, would have been preferred. Unfortunately, firms were just not willing to share such detailed transaction level data. In addition, because ILS does not support the actual execution of transactions, there is no central database of transactions that could be accessed. However, because the respondents were individuals with significant experience and responsibility for the purchase of parts, their perceptions should be well-informed and reliable.

Second, the survey did not ask firms when they had started subscribing to ILS. Fortunately, this information was available directly from ILS for the 12 subscribers (out of a total of 17 respondents who subscribe) who included their business cards with the surveys. On average, these 12 firms have been subscribing to ILS for 7.5 years. One firm has been subscribing

for two years, all others for at least four years. The oldest has been a subscriber for 16 years. Thus, the responses should reflect established patterns of usage, based on substantial experience with the system, and not transitional impacts.

Finally, conclusive evidence cannot be offered that the sample of 30 is exactly representative of the population in terms of the proportion of users and non-users, or that the 17 respondents who subscribe to ILS exactly represent all ILS users in terms of their size distribution. ILS was asked for data on the proportion of all airlines, by size, that subscribe to ILS, but ILS considers this sensitive competitive information and was not willing to share it. However, there are two indications that there is no systematic bias in the sample. First, as Table 3 shows, there is no apparent difference in size between respondents who use and do not use ILS. Second, the proportions of respondents from the ATA (23%) and the RAA (28%) mailing lists are very close. The ATA membership typically includes larger airlines than the RAA (as evidence, only three of the 16 respondents from the ATA list had fewer than 15,000 purchase orders, while only three of the 14 respondents from the RAA list had more than 15,000). Thus, the sample drew equally from the population of large and small airlines, suggesting no non-response bias, at least in terms of size.

(Chart Omitted)
Captioned as: Figure 2.

(Table Omitted)

Captioned as: Table 2.

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Captioned as: Table 3.

The Aircraft Parts Industry

The aircraft parts industry supplies replacement parts and repair services for the maintenance of aircraft. Annual sales exceed $5 billion. Customers in the industry range from large commercial airlines to individual plane owners. The industry classifies parts into three major categories: rotables, repairables, and expendables. Rotables are high cost parts that, in theory, can be refurbished as often as needed over the life of an aircraft, for example, landing gear. A repairable part can also be refurbished but only a limited number of times, that is, it's expected life is less than the expected life of an aircraft. Finally, expendables cannot be repaired and must be replaced during normal maintenance.
Purchases in the industry can be divided into two categories:

1. Purchases for inventory: This refers to the regular purchase of parts in anticipation of demand. When a customer buys an aircraft, it receives information from the OEM on expected consumption and suggested inventory levels. By aggregating the expected consumption forecasts over the size of its fleet, the owner can decide which parts, and in what quantities, to stock.

2. Aircraft on ground (AOG): These are emergency purchases in response to an aircraft that is grounded and needs a part. Because of the high cost of a grounded aircraft, the primary imperative in an AOG situation is to find the needed part as soon as possible.

The industry can also be divided into two major market sectors:

1. The OEM sector, which includes OEMs and authorized distributors, deals solely with new parts. This is the larger sector in terms of dollar volume. This segment has low fragmentation, frequently with a single manufacturer and its authorized distributors, if any, as the only sources for a part. Price differentials among the suppliers are small, and prices change infrequently, typically once a year.
2. The surplus sector, or the aftermarket, deals mostly with used parts. This segment is very high in variability, with over 15,000 brokers, distributors, and repair shops. The nature of the business in this sector is highly opportunistic. Thus, a seller may buy a retired plane, disassemble it, and offer the parts for sale. Repair firms may buy

unserviceable parts and refurbish them for resale. Hence, the inventory carried by a firm can vary significantly over time. In addition, prices are determined strictly by negotiation and are, therefore, highly variable and volatile.

The primary advantage of the OEM sector is assured quality. The quality of parts in the surplus sector can be quite variable. In spite of FAA requirements that all parts be appropriately tagged,6 policing is difficult and not all parts are usable as certified. The OEM sector typically also has higher prices for routine purchases. However, for AOG purchases, the OEM sector may actually be cheaper in some cases. In the surplus market, when word gets out that an airline is shopping for an AOG, the airline can pay a significant premium. Finally, for routine purchases, the OEM sector is usually a reliable source of parts. The primary advantage of the surplus sector is in AOG situations when immediacy is of prime importance, and the OEM/distributors do not have the part in stock. The surplus sector is also useful for owners of older aircraft models because the OEM often does not stock parts for these models and charges a premium to manufacture them to order.

Inventory Locator Service

Inventory Locator Service (ILS) was started in 1979 by two brokers in the aftermarket (HBS 1990). ILS is an electronic market on which sellers list their parts inventory and repair shops list their capabilities. A buyer looking for a part or trying to find a repair shop with a specific capability can enter a query and get a list of all sellers listing that part or all repair shops certified by the FAA to perform the repair. There are over 31 million records in the parts database and 3 million in the repair database. The system receives about 24,000 inquiries on an average business day from over 3,000 users. ILS is directed at the surplus sector. Thus, the parts listed in the system are almost all used parts although, occasionally, an airline or an OEM with surplus inventory will list some new parts. Although ILS provides a field for price, it is rarely completed. Thus, ILS is currently used mostly for identification and not selection. Fred Meyer, ex-president of ILS, explains:

Supply and demand control the market price-rarely are sellers willing to list their price on ILS for all the world to see. That is left for the buyer and seller to negotiate. .. . The ultimate objective is to get the buyer to call you. The most successful companies are those that have the material in stock, have purchased it at a price that allows them flexibility in their selling price, and have the relationship that will allow them the final quote. (HBS 1990, p. 2).

The initial design of ILS included just the parts database; the repair capability database was added in 1993. Over time, ILS has incorporated many additional features either to facilitate communication among buyers and sellers, or to help firms gather intelligence on market demand and supply. For instance, ILS has the ability to cross reference part numbers. The military has devised a system of National Stock Numbers (NSNs) to map most manufacturers' part numbers to a common system. ILS uses this system: when a buyer requests listings for a part number, it gets the names of all sellers listing inventory under that part number or any of the cross-referenced part numbers.

The Message Broadcast capability allows a user to send a message to every other user on the system. A buyer with an AOG can use this feature to try to locate a part if a standard search of the ILS database fails to uncover a source. Or a seller can advertise a special part or a special deal. On average, ILS processes about 30 such messages a day. Two factors explain the relatively limited use. First, it is fairly expensive-$30/line of text in the message. As a result, sellers typically use it only for special deals on expensive parts. Second, for sellers, routinely using this feature would effectively amount to listing their prices for all to see which, as has been noted, they are not willing to do. Users with an ongoing need for particular parts can use the Standing Order Inquiry feature: every time the user logs into ILS, the system conducts a search for the part(s). This feature may be used by a buyer who purchases a part regularly, a seller who routinely stocks a part and wishes to gather market intelligence to decide how to price the part, or even by an OEM trying to plan appropriate production levels. The Part Number Statistics Inquiry, which shows how

often a part has been requested on the system, can be used by sellers and OEMs to gather intelligence on market demand. ILS also provides users access to Department of Defense (DOD) procurement data. For each part number, the system shows the last five DOD purchases-supplier, quantity, price, date, contract number, and purchasing entity. Subscribers can use a new feature, ILS Classified, to advertise and purchase products other than standard aircraft parts, such as assembled components or complete aircraft. ILS has just begun to introduce a feature called ILS Direct. Once this feature is fully implemented and widely used, a buyer will be able to, with a few keystrokes, send an individually addressed request for a quote, via e-mail or fax, to each seller listing a part in stock. Thus, ILS will offer some support for the selection phase as well. The support will still, however, be partial because it will be up to individual sellers to respond. ILS will not be responsible either for collecting responses from sellers or for presenting them to the buyer on a single screen for easy comparison. Note, however, that the data was collected before this feature had even begun to be introduced. Thus, in this paper, the data and conclusions presented are based on ILS as an electronic market that is used for identification only.

Interview Results

Use of ILS 7

ILS is directed at the surplus sector-hence, buyers' use of ILS depends on when they need to, or choose to, purchase from this sector.

The Airline and the FBO

Two of the three buyers interviewed-the airline and the FBO-use the surplus sector and ILS primarily for AOG purchases, choosing to make their routine purchases for inventory from a set of preferred vendors in the OEM sector whenever possible. As the manager at the FBO noted: ILS is mostly used for AOG situations. All of our standard parts that we stock in our inventory, [we] generally don't get from the ILS. The standard parts come from the aircraft manufacturers. . ..There are just too many parts and to search every part, every time, it would be too time consuming.

Similarly, the materials manager at the airline characterized ILS as follows:

You talk about grounding a . . . $40 to $50 to $60 million airplane where ILS is a couple hundred dollars a month. ILS is an insurance policy. If I get one part a month and I keep an airplane flying, it's worth it.

These buyers offered two reasons for preferring the OEM sector for most routine purchases: routinization/electronic integration and quality.

Spot exchange (electronic brokerage) versus routinization (electronic integration):

The primary benefit of electronic markets is efficient market search, or electronic brokerage (Malone et al. 1987). Hence, they are most useful for spot market purchases, that is, when a buyer shops the market to try to find the "best" seller for each purchase. This maximizes the buyer's chances of finding the best price. However, it has an opportunity cost: the buyer must forego the transaction cost efficiencies of standardization and routinization of the exchange process (Aldrich 1979; Marrett 1971) and any contractual benefits that can be achieved with ongoing relationships with a select set of suppliers.

In interorganizational information systems, this routinization can be translated to electronic integration (Malone et al.1987), which increases the efficiency of a dyadic relationship by creating electronic linkages that go beyond the exchange of routine order/invoice information. Electronic integration, however, presumes a long term relationship between buyer and seller-the highest levels of electronic integration, in fact, such as automated stock replenishment, or "vertical quasi-integration," (Zaheer and Venkatraman 1994) are possible only when the buyer has established an exclusive relationship with a seller for a product (Choudhury 1997).

Specifically, in the aircraft parts industry, buyers must choose between the identification benefits, including possibly better prices, from spot purchases with ILS, and the dyadic transactional efficiencies of routinization and electronic integration-lower selection, negotiation, and transaction execution costs-with longterm relationships. For regular purchases of routinely stocked items, both the FBO and the airline indicated that the latter were more valuable than the former.

The large airline has established exclusive relationships, with automated parts replenishment, for 15% of its highest volume parts. As the materials manager at the airline noted, given the volumes, he cannot possibly justify having someone search the market for each purchase of these items. On the other hand, with an exclusive relationship, he obtains at least two sets of transactional efficiencies: (1) reduced ordering costs: for items under exclusive contract, when the inventory falls below a prespecified level, the airline's inventory control system generates a purchase order and transmits it electronically to the selected vendor, without human intervention, and (2) reduced inventory costs: when the airline signs an exclusive contract, it provides the vendor usage information for the part for the previous two years. The vendor, in turn, offers an assurance of timely supply, allowing the airline to maintain lower inventory levels. At the same time, because the vendor is assured of being an exclusive supplier and knows the airline's usage patterns, it can proactively anticipate demand and improve its own production/procurement planning. As a result, there is reduced inventory throughout the system, rather than just a shift from the airline to the vendor.
In theory, if ILS included prices, a buyer's computer, having determined that inventory had fallen below a preset level, could search ILS for the lowest cost seller and transmit an order for the reorder quantity. However, while this would reduce ordering costs, without the enhanced coordination between buyer and seller about consumption patterns, it would be difficult to reduce system inventory. Sellers, without the assurance of business, would not be able to anticipate demand and plan. The airline, without the assurance of timely supply, would have to maintain higher inventory levels, or risk having to purchase at inflated prices. Finally, the airline leverages the exclusive contracts, along with its large volumes, to receive substantial price discounts. While it is possible that, on any specific transaction, the airline may still be able to obtain a lower price on the spot market, these occasional potential price savings are outweighed by the transactional and contractual benefits of an exclusive contract.

The fact that ILS does not allow direct price comparisons also affects the FBO's decision not to use ILS extensively for routine purchases. Consider the following statement by the manager:

Each time you run those parts on the ILS you also have to make a corresponding phone call to find out how much the part is and that's what takes the time. Rather than the parts man just calling the OEM saying I need this part, ship it to me (he already knows the price), he now has to put it in the ILS, get a computerized run of where to call, he may make four or five calls on that list and get all the prices. Then he'll come to me and say which one do you want and I'll make that decision. Then he has to go back and call them again to order the part. So we can't use it on the majority of what we are ordering.

However, AOG purchases are qualitatively different in nature from routine purchases. Each AOG purchase is typically for a different item, because while there are thousands of parts on an aircraft that can cause an AOG, any single part is likely to cause an AOG very infrequently. Further, by its very nature, an AOG occurs because an airline was unable to anticipate a need for a part and therefore does not have it in stock. This makes it virtually impossible for an airline to plan ahead or establish long-term relationships for AOG purchases. In addition, because of the very high cost of a grounded aircraft, it is critical to find the needed part as fast as possible. As a result, even buyers who normally prefer to purchase from the OEM sector are often forced to turn to the surplus sector. Thus, AOG purchases lend themselves to spot market exchanges that benefit from the use of an electronic market like ILS.

In fact, the airline indicated that the few times it uses ILS for non-AOG purchases, it is often because it needs to replenish a part quickly to avoid an AOG, and the OEM sector cannot supply the part in time. While

these are not technically AOG purchases because no aircraft is grounded yet, they are similar in character and can be effectively viewed as pseudoAOG purchases.

Quality: The greater assurance of quality in the OEM sector was particularly important to the airline. In the words of the materials manager:

[If we] buy off the aftermarket, when it comes in the door it has to go through special inspection . . . you start looking at your additional in-house processing time and cost to get that item to clear inspection, and the cost if it's rejected both financially and if there's a stock out, it isn't worth the risk. . . . We are accountable for traceability to the FAA. Every component that we contract, we have to know how long it's been on the aircraft, where was it born, and where did it die. Parts that don't meet the requirement, we are to the point where we have to smash and bash them. Because of liability, we've made a business decision to use only approved distributors and OEMs rather than the aftermarket.

This was not, however, as significant a concern for the manager at the FBO who indicated that while there are some bogus parts in the aftermarket, as long as a buyer is careful, there are very few problems with parts purchased through the ILS. We will once in a while request a part that isn't what they said it to be. They say it's a serviceable part and when we get it, we find its a piece of junk. It's rare. You also have to watch who you are dealing with.... But, ILS has opened us up to a lot of new vendors that we never dealt with before.

For both the airline and the FBO, there was one exception to the general rule of making most routine purchases from the OEM sector. For the purchase of very expensive rotable components, both buyers shopped the surplus sector and used ILS. The airline materials manager explained why:

A rotable component, we will shop around for. It's so infrequent, it's worth shopping for a 50% savings. If the part is on somebody's shelves, it is possible.... on a big ticket item like a starter, we can . . . save $25,000 through ILS, it is worth it.

The Package Delivery Company

The third buyer interviewed-the package delivery company-also indicated that it used ILS heavily for its AOG and rotable purchases. But it also used the surplus sector and ILS for a significant proportion of its routine purchases of non-rotables, largely because it had an old fleet for which model-specific parts were no longer being manufactured by the OEM.

Interestingly, however, even within the surplus sector, the company tried to make as many of its routine purchases as possible from a small set of preferred vendors. While it frequently shopped ILS for these purchases, it was often to get better information for negotiating prices with the preferred vendors. This will be referred to again.

Additional Features

All three buyers were asked what additional features they would like to see in ILS that might make the system even more valuable. They all indicated that it would be nice to see prices on ILS but added that they did not expect this, given the nature of the aftermarket and the incentives for sellers.

Prices

The buyers in these interviews differed in their responses with respect to the effects of ILS on prices. The airline indicated that while ILS may have occasionally allowed it to find a better buy during an AOG, the primary impact of ILS was on its ability to find parts faster and reduce the length of time an aircraft was grounded. As noted earlier, the airline views ILS more as an insurance policy than as a means to lower prices. The manager at the package delivery company also stated that ILS had little impact on the prices they paid for AOG purchases, adding that in some cases, ILS actually allows sellers to extract an additional premium during an AOG situation:

If you call a vendor and the vendor looks on ILS and sees he's the only one who's got it . . . a $200 part you need to get on the plane and . . . its Saturday or Sunday and you call this vendor and they're opened, he has this part, well it just increased in price. Well it's more costly for your plane to sit on the ground than it is, say, to pay $1,000 for this part. You have better information on who has the parts, but so do the vendors.

However, as the only buyer interviewed that made significant use of ILS for routine purchases of non-rotables, the manager at the package delivery company did indicate that ILS had helped the company lower prices for routine purchases. Interestingly, this was not as much because the company was buying from cheaper or a wider range of suppliers, but because ILS allowed it to gather better market intelligence which, in turn, allowed it to negotiate better prices with its preferred vendors.
Say I have one vendor that I like to deal with, say this part is a good overhaul, I can call around and get a few other quotes and he'll match my lowest. Maybe some of the others I've never done business with, but just to get an average price . . . that's what we'll do.

The manager at the FBO, on the other hand, felt that ILS had helped him lower prices, both during AOG situations and for rotables. Referring to rotable purchases, he noted:

ILS is used mostly to find better deals on the parts that we need . . . rather than just go pay the high prices from the manufacturers, we can put the part into the ILS and if somebody has one it will show up and we can buy it. So it's there really for savings all around.

Similarly, with respect to AOG purchases, he noted that ILS had made it possible for him to reach a much wider set of suppliers and, therefore, increased his ability to find a better buy:

What ILS does is put you in touch with companies that have the cheaper prices . . . opens you up to a whole new list of companies.... Before ILS ... we would have a list that might contain no more than four or five companies.... ILS tends to give you a lot of names but it also narrows down your search because you know that the company has the part. . . . By using ILS, we have a chance to find a better buy.

Interestingly, however, he did not feel that overall prices in the industry had been significantly lowered. Because ILS did not list prices, he felt that most sellers did not have the time to use the system to routinely gather market intelligence and adjust their prices. I don't think that the prices are cheaper because of ILS . . . the distribution of prices has probably not changed. Because, unless you're dealing with a specific component and . . that's all you sell, you wouldn't have the time to use ILS to assess competitor pricing.

Brokers

All three buyers indicated that ILS had minimal impact on the extent to which they were using brokers. The airline made very little use of brokers even before ILS. The FBO and the package delivery company both indicated they still used brokers occasionally, just as they did before ILS. Many factors explain this.

First, as ILS typically lists parts availability only and not prices, buyers still have to negotiate prices individually for each purchase. A broker can help them with this step. In fact, one of the two brokers interviewed claimed that in many cases, he can negotiate better deals because he represents return business for a seller that the ultimate buyer may not.

One customer was searching ILS and so [were we], and we found it and quoted him cheaper than he found it.... We set up a network, worldwide, they know we have a customer so they will give us a discount. So they quote us 30% less than they'd quote the end buyer because we're return business. So we'll quote it 10% less than they quote it directly.

This same sentiment-the importance of brokers' personal relationships in negotiating prices-was echoed by the manager at the package delivery company. When asked why he still used brokers when he could use ILS to

search the same sources that the broker was searching, he explained that "Sometimes, these guys have sources you don't know about." Even if this is not necessarily true in all cases, the potential for this creates an incentive for buyers to continue to use brokers.

Second, as ILS becomes a widely used access mechanism for purchases from the surplus sector, sellers feel that they will get a call from a buyer looking for a part only if they list the part on ILS. As a result, sometimes firms list parts that they do not really have in stock, confident that they can find the part upon receiving a call from a potential buyer. This, of course, reduces the value of ILS to buyers since they are forced to call sellers who do not have the part in stock, the problem that ILS is trying to alleviate in the first place.8 As a result, a buyer will sometimes use a broker, typically in parallel with its own use of ILS, to help find a part by screening the listings on ILS, based on the broker's knowledge of the market, to determine which of the sellers listing the part are actually likely to have the part and also represent the condition of the part faithfully. As the manager at the package delivery company stated:

We have found that a lot of companies have a lot of inventory out there that is not actually out there. . . They hope that they will get a certain customer that will call them first. We have a couple of people we deal with on a regular basis . they'll get it to us as quickly as possible.

Similarly, commenting on the value that he could add to a customer, one of the brokers remarked:

Over the years we know who has inventory and who is listing parts that they don't have. We deal with the same manufacturers and they are listing our manufacturers inventory and we know that is not something that they have.... Now we know who those people are.

Both of the brokers interviewed claimed that their business had improved with the introduction of ILS. The small repair shop owner/broker claimed that his parts business had grown from 20% of his total volume to 50%, with repair constituting the rest. One reason is that many smaller buyers do not have the volume of transactions to justify direct access to ILS. These buyers may have actually increased their use of brokers because, with ILS, brokers can offer them better service. In fact, the broker/distributor interviewed stated that he would rather see ILS raise access prices than lower them, because lower access prices would make it possible for smaller buyers to subscribe to the system directly.

At the same time, brokers have not lost a lot of business from larger buyers who do subscribe to ILS but are, in many cases, continuing to use brokers for the reasons stated above. In fact, the owner of the repair shop/broker estimated that over 50% of the buyers he does business with are ILS users themselves, supporting the idea that many buyers use brokers in parallel with their own use of ILS.

Inventory

All of the buyers in these interviews noted that ILS had no effect on their inventory levels largely because they are just not using ILS for their routine purchases. The airline materials manager explained that the airline's inventory levels are based on a service level goal, defined in terms of the proportion of parts requests (from their mechanics) that they are able to meet from inventory and, correspondingly, the proportion that can be allowed to lead to an AOG purchase. The proportion is based, among other things, on the relative costs of holding inventory versus AOGs. This proportion, combined with the lead times for routine purchases, suggests the appropriate inventory levels for parts. Because they do not use ILS for routine purchases, so that lead times are unaffected, and ILS has not significantly lowered the price they pay for parts during AOGs, they have not adjusted their inventory levels.

Survey Results

The analysis in this section is based on the 17 respondents that subscribe to ILS. In light of the small sample size, only some simple nonparametric statistics are employed to analyze the survey data (Kohler 1994; McClave et al. 1998). Specifically, because the bulk of the survey is based on a five-point Likert scale where respondents were asked to indicate their

agreement or disagreement with statements, the sign test (.1 level of significance) is used to examine, for each statement, if the median response for the sample, or a subgroup, is statistically significantly greater or less than the neutral value of 3, indicating disagreement or agreement with the statement respectively. In addition, the Wilcoxon ranksum test (.05 level of significance unless otherwise noted) is used to examine if there is a significant difference between the responses of smaller and larger airlines.

Use of ILS

The results from the survey generally support the interview findings but also indicate that there are significant differences between large and small airlines. Airlines in the survey search ILS for 65% of their AOG purchases and 37% of their routine purchases. Larger airlines9 search ILS for 61% of their AOG purchases but only 16% of their routine purchases. For smaller airlines, the use of ILS for AOG and routine purchases is more comparable-70% of AOG purchases and 55% of routine purchases (Table 4).

Respondents were also asked to express their agreement or disagreement with a number of statements relating to their use of ILS. The results (Table 4) support the patterns of usage discussed above: larger airlines use ILS primarily for AOG purchases while smaller airlines are more likely to use ILS for routine purchases as well. In response to the statement, "Our primary use of ILS is to find a needed part during AOG purchases," the mean was 2.63 (1 = strongly agree; 5 = strongly disagree) for the overall sample, 2.13 for larger airlines, and 3.13 for smaller airlines. The median response for larger airlines is significantly lower than 3, indicating agreement with the statement. The Wilcoxon rank-sum test confirms that the average response for larger airlines is significantly lower than that for smaller airlines.

(Table Omitted)

Captioned as: Table 4.

To the statement, "We routinely check ILS even for non-AOG purchases so that we can be sure of buying at the lowest price," the mean response was 2.53 for all airlines, 2.00 for smaller airlines, and 3.13 for larger airlines. The median for smaller airlines is significantly lower than 3, indicating agreement with the statement. On the other hand, the four largest airlines in the sample, with an average of more than 100,000 purchase orders each, all disagreed with the statement further supporting the finding that larger airlines are less likely to use ILS for routine purchases. The Wilcoxon rank-sum test confirms (.1 level) that the average response for smaller airlines is significantly lower than that for larger airlines. To the statement, "We check ILS only when we are unable to obtain a part from the OEM or one of our regular distributors," the average response for all airlines was 2.82, for smaller airlines, it was 3.33, and for larger airlines, it was 2.25. The median response for the overall sample or any of the size-based subgroups is not significantly different from 3. That is, in many cases, airlines search ILS, perhaps to gather market intelligence as suggested by the package delivery company, but make the eventual purchase from one of their regular vendors (OEM or distributor).

Finally, respondents were asked if their use of ILS for AOG and non-AOG purchases would increase significantly if prices were listed on the system. The median response for the overall sample is significantly lower than 3 in each case, indicating that airlines would indeed increase their use of ILS if it also included price information. Interestingly, with respect to non-AOG purchases, the median for larger airlines is not statistically significantly different from 3. That is, larger airlines do not believe that even the addition of prices would persuade them to increase their use of ILS significantly for rountine purchases. Prices

The airlines in the survey were asked to express agreement or disagreement with the statement, "ILS has helped us lower the prices we pay for AOG purchases" (Table 5). The mean response was 2.82 (1 = strongly agree; 5 = strongly disagree) for all airlines, 2.33 for smaller airlines, and 3.38 for larger airlines. The median response for smaller airlines is significantly lower than 3, indicating agreement with the statement. The

Wilcoxon rank-sum test confirms that the average response for larger airlines is significantly higher than that for smaller airlines.

To the statement, "ILS has had no impact on the prices we pay for non-AOG purchases," the mean response for all airlines was 3.47. Not surprisingly, given the greater use of the surplus sector and ILS by smaller airlines for these purchases, smaller airlines had a mean response of 4.00 whereas larger airlines responded with a mean of 2.88. The median response for smaller airlines is significantly higher than 3, that is, ILS did lower their prices for routine purchases. The Wilcoxon rank-sum test confirms that the average response for smaller airlines is significantly higher than that for larger airlines.

The interviews suggested that one factor affecting a buyer's ability to reduce prices with ILS may be its willingness to expand its base of suppliers. Thus, airlines were asked to respond to the statement, "ILS has considerably broadened the base of suppliers with whom we place our AOG orders." The mean response was 2.47 for all airlines, 1.89 for smaller airlines, and 3.13 for larger airlines. The median response for smaller airlines is significantly less than 3, indicating agreement with the statement. The same question was asked of airlines for non-AOG purchases. The mean response was 2.71 for all airlines, 1.89 for smaller airlines, and 3.63 for larger airlines. The median response for smaller airlines is significantly less than 3, indicating agreement with the statement. The Wilcoxon rank-sum test confirms that the average response for larger airlines is significantly higher than that for smaller airlines.

(Table Omitted)

Captioned as: Table 5.

Finally, the airlines were asked if they agreed or disagreed with the statement, "Because ILS makes it easier for buyers to locate and compare suppliers, there has been an overall reduction in the prices of used parts in the industry." The mean response for all airlines was 2.94. Smaller airlines had a mean of 2.56 while larger airlines had a mean of 3.38. None of the median responses is statistically significantly different from 3. That is, even smaller airlines who believe that theibeen reduced with the use of ILS do not necessarily feel that there has been a price war in the industry overall.

Brokers

The airlines were asked to express their agreement or disagreement with the statement, "Because ILS allows us to search the market easily to locate a part, we have considerably reduced our use of brokers." The mean response for all airlines was 2.69 (1 = strongly agree; 5 = strongly disagree). The difference between larger (3.00) and smaller (2.44) airlines was minimal. The median responses for the group as a whole as well as for the sizebased subgroups are all not significantly different from 3, indicating no significant impact on the use of brokers by buyers.

Inventory

The airlines were asked to express their agreement or disagreement with the statement, "Because ILS has made it easier for us to locate a part in short time, we now maintain significantly lower inventory levels." The mean response for all airlines was 3.47 (1 = strongly agree; 5 = strongly disagree). Larger airlines had a mean of 4.25 while smaller airlines had a mean of 2.78. The median response for the overall sample is not statistically different from 3. The median for larger airlines is significantly greater than 3, indicating disagreement with the statement. The Wilcoxon rank-sum test confirms that the average response for larger airlines is significantly higher than that for smaller airlines. That is, airlines as a group, and particularly large airlines, do not feel that ILS has helped lower their inventory levels.

Discussion

The observations in the aircraft parts industry suggest that the model in Figure 2 is incomplete. A number of additional factors influenced the use and impacts of ILS. In this section, these factors are identified,

distinguishing between those that appear to be specific to the aircraft parts industry and those that should be relevant in a broader range of contexts. The latter are incorporated in a proposed revised model (Figure 3) of when firms use electronic markets and how these systems affect prices, the role of brokers, and inventory levels. The individual elements of the model are discussed below.

Use of electronic markets

Aircraft parts are low in asset specificity: model-specific parts are usable by all the owners of a particular model of aircraft while more generic parts, such as bolts and rivets, are usable by an even broader cross section of buyers. The parts are also low in complexity of description: with the part number cross-referencing facility in ILS, a firm can fully specify a part with a single number together with the appropriate FAA tag. Yet, in this study, these two factors alone were not sufficient to explain the adoption and use of ILS. Rather, the data show that large airlines use ILS primarily for AOG purchases. Smaller buyers are, however, more likely to use ILS for routine purchases as well.

This is not to suggest that specificity and complexity of product description are irrelevant.

Highly specific products, by definition, have very few buyers and also typically very few sellers. Thus, an electronic market designed to facilitate market search is likely to be of limited value. Similarly, by making it difficult for firms to describe products accurately over an electronic forum, high complexity of description may make it difficult to implement an electronic market. However, the data in the aircraft parts industry show that additional factors must be considered.

(Chart Omitted)
Captioned as: Figure 3.

Part of the explanation for the observed usage patterns may lie in factors unique to the aircraft parts industry. For instance, one reason the airline interviewed does not want to buy from the surplus sector is its very high cost of parts failures and its concern about the quality of used parts. Similarly, smaller buyers may be using the surplus sector and ILS more for routine purchases partly because they have older fleets for which parts are not as easily available from OEMs. The very high cost of AOGs and the time value of locating parts quickly also clearly motivate adoption of ILS. However, part of the explanation can be attributed to factors that should be more generally applicable to other industries and electronic markets. In particular, the following three transaction characteristics, shown on the revised model in figure 3, seem to be important in determining the use of electronic markets.

Market variability: Although the OEM sector is the !arger market segment in the aircraft parts industry, ILS is directed almost exclusively toward transactions in the surplus sector. The surplus sector, as noted earlier, is extremely fragmented and opportunistic with a large number of small firms whose inventory can vary significantly over time. That is, it has very high variability in product availability. As a result, a buyer can never be sure who will have a needed part and must often conduct an extensive search to find the part. This is a particularly important success factor for an electronic market such as ILS that supports identification only. In addition, the very high variability in prices, which are determined strictly by negotiation, means that it is in a buyer's interest to try to locate multiple sellers for a product and comparison shop. Generalizing, therefore, high market variability in product availability and/or prices make an electronic market particularly useful for locating sellers that offer a specific product (identification) and/or for comparing prices across sellers (selection).

Frequency of purchase: The frequency of purchase appears to be an important influence on the tradeoff between the benefits of a spot exchange process with an electronic market such as ILS and the transaction cost benefits-reduction in costs of selection, negotiation, and transaction execution-of routinization and electronic integration with longer term relationships. The observations in the aircraft parts industry suggest that the lower the frequency of purchase, the lower the benefits of

routinization and hence the greater the incentives for buyers to use an electronic market to try to obtain the best price each time. This would partially explain why larger airlines use ILS predominantly for AOG purchases. As noted earlier, each AOG purchase is typically for a different part so that any single part is purchased infrequently. On the other hand, for more frequent routine purchases, these airlines prefer long-term, sometimes exclusive, relationships.

Frequency of purchase may also partially explain why smaller airlines are more likely to use ILS for routine purchases. Smaller airlines use parts in smaller quantities-hence, a greater proportion of the parts they need are bought infrequently. As a result, the benefits of routinization may be limited, making it worthwhile for smaller airlines to search the market with ILS even for the routine purchase of these parts. On the other hand, large airlines that buy a greater proportion of their parts frequently, and in greater volumes, benefit more from longer term relationships with vendors.

Note that frequency of transactions is also an important element of transaction cost theory (Williamson 1985). Hierarchical governance structures are typically viewed as appropriate only for frequently recurring transactions; occasional transactions are more likely to be conducted over standard markets. The analysis here also suggests that for frequent transactions, buyers prefer more hierarchical exchange relationships to electronic markets.
Product value: All of the interviewees used ILS for purchasing very expensive rotable parts. Part of the explanation may be that, because rotables are repairable throughout the life of the aircraft, buyers purchase rotables very infrequently. However, the buyers also explicitly noted that using ILS to shop for rotables is worthwhile because even a small percentage saving in prices can be significant. That is, the higher the product value, the more likely it is that even small percentage savings in prices-from comparison shopping for each purchase with an electronic market-can offset the opportunity costs of foregoing longer-term relationships.

Finally, it is important to caution that the scope of the electronic market on which these conclusions are based is limited to identification only. Care must, therefore, be taken in generalizing the findings. It is possible that the patterns of use would be different for an electronic market that also supported selection and/or transaction execution. In this study, buyers indicated that they would use ILS more extensively if the system also included prices and supported selection. However, they also reaffirmed that the nature of the transactions for which they used ILS would not change. Thus, large buyers did not indicate that their use of ILS for routine purchases would increase significantly even if prices were listed on the system. One possible interpretation of this finding is that the transaction characteristics identified above are probably valid even for electronic markets not limited to identification; however, the threshold values for the variables may change depending upon the scope of the electronic market. Thus, the frequency of purchase at which it becomes more efficient for buyers to shift to long term relationships from electronic markets may be higher for an electronic market that supports all stages of a transaction. Or, the product value at which this same tradeoff shifts in favor of an electronic market may be lower for an electronic market that supports all stages of a transaction.

The revised model in Figure 3, therefore, reflects the possibility that the scope of an electronic market, specifically whether or not it "supports selection (with) price information," may at least affect the extent of usage of the electronic market, if not the transaction characteristics for which it is used.

Prices

First, the two independent variables in proposition 2 are examined:

1. Scope of the electronic market: As noted, ILS is currently used almost exclusively for the identification of potential trading partners, and not for selection.

2. Product differentiation: The technical specifications of aircraft parts

are determined by aircraft and parts manufacturers, of which there are very few in number. In fact, often there is only one authorized manufacturer for a part. Hence, competing sellers-authorized distributors and manufacturers in the OEM sector; brokers/distributors, repair shops, and other resellers in the aftermarket-all sell the same functional part. Thus, for routine purchases, aircraft parts are commodities. However, during an AOG situation, two attributes that become extremely important, creating differentiation among sellers, are immediate availability and location.

Proposition 2 would, therefore, predict that ILS should lower prices for routine purchases but not for AOG purchases. In addition, because the primary use of ILS is for AOG purchases, particularly among the higher volume large buyers, overall prices in the industry should not be significantly lowered. The data largely support these predictions (with one exception that will be discussed shortly). Smaller buyers feel that ILS has helped them lower prices for routine purchases. Larger buyers do not use ILS much for routine purchases, so these prices are, of course, largely unaffected. Larger buyers do not feel that ILS has helped lower their AOG prices either, although they use ILS for more than half these purchases. Finally, all the buyers in the study generally feel that the overall level of prices in the industry has not declined significantly.

As the manager at the FBO commented, because ILS does not list prices, suppliers do not have the time routinely to assess and adjust to competitor pricing. On the other hand, the system provides vendors (and buyers) with better inventory information, both through a search of the ILS database and through such features as Standing Order Inquiry and Part Number Statistics Inquiry. Having better information on market demand and supply may, in some cases, persuade a seller to reduce prices,' or allow a buyer to negotiate better prices. But, as the manager at the package delivery company noted, during AOG situations, when immediate availability and location are critical, sellers can sometimes use the inventory information to extract additional premiums. The net effect for AOG purchases, therefore, is that overall prices are not significantly lower or higher but rather more accurately reflect market supply and demand at the time of each transaction.

During routine purchases, however, sellers' ability to extract premiums is lower. The location of the part is not as important-buyers can, therefore, access a wider pool of suppliers. Similarly, because immediate availability is not critical, buyers can wait to purchase parts until the market information on ILS indicates that demand and supply levels are favorable for them. This may explain why buyers who use ILS for routine purchases have been able to lower their prices.

The one result that seems inconsistent with proposition 2 is that smaller buyers feel that ILS has helped reduce their AOG prices. Two factors may account for this result.

Differentiation (cost of AOG): The cost of an AOG is probably higher for larger buyers, such as commercial airlines, than for smaller buyers, such as small charter airlines. The lower the cost of an AOG, the lower the differentiating power of the two attributes-availability and location-and hence the more commodity like AOG purchases become. That is, AOG purchases may be less differentiated for smaller buyers than for larger buyers. Hence, as per proposition 2, smaller airlines are more likely to see a reduction in their AOG prices.

Purchase criteria: A clear difference between larger and smaller buyers is their criterion for choosing suppliers. Among larger airlines, the primary criterion seems to be assurance of quality. The airline in these interviews indicated that its first preference was always for a known supplier in whose quality it felt confident. The survey confirmed that larger airlines have not significantly increased the base of suppliers from whom they make their purchases. On the other hand, the FBO and the smaller buyers in the survey are much more willing to use ILS to buy from new vendors to save on price. That is, for larger buyers, the market is differentiated by suppliers' reputations for quality whereas for smaller buyers, it is more of a commodity market with homogenous sellers. Note that this distinction is based on the different purchase criteria used by smaller and larger buyers. The revised model in Figure 3, therefore, reflects the expectation that prices are less likely to be lowered for buyers whose purchase

criterion is not price.

Further, at least some of the explanation for the observations in the aircraft parts industry must be attributed to the scope of ILS as supporting identification only. For instance, sellers can exploit inventory information during AOG situations to extract premiums partly because they do not have to commit to a price on ILS. An electronic market that includes prices may or may not have the same impact. Figure 3, therefore, depicts the possibility that an electronic market that also supports selection, with access to price information, may have a greater impact on prices.

Brokers

Proposition 3 stated that electronic markets would significantly reduce the extent to which buyers use brokers. The data show, however, that there is a need to distinguish between the impact of an electronic market on the extent of usage of brokers and on the specific nature of the value added by brokers (Figure 3). In the aircraft parts industry, the impact on the former was negligible but there was some indication that the latter is being partially redefined. Specifically, the role of brokers in helping buyers identify a set of potential sellers may have been reduced, at least for ILS subscribers, but their role in helping buyers with selection and negotiation, and the overall extent to which buyers use brokers, has not been significantly affected. In addition, as discussed below, a new value-added function has become very important for brokers: data validation. The following three factors, depicted in the revised model in Figure 3, were important in determining the impact on brokers.

Fragmentation of buyer population and cost of access: The cost of access to ILS makes it inefficient for smaller buyers to subscribe directly to the system. The higher the cost of access, and the more fragmented the buyer population, the smaller the proportion of the final buyer population that can afford direct access and the more likely it is that brokers, rather than be replaced by electronic markets, will be the direct users of the electronic markets. Brokers may even be able to increase their market share relative to direct interaction between buyers and manufacturers if they can use the system to improve the service they offer buyers. This was the experience of the two brokers interviewed.

However, the cost of access to electronic markets is not entirely within the control of brokers. As information technology evolves, this cost is likely to continue dropping, and the size of the customer base relying on intermediaries will become increasingly smaller. For instance, in the airline industry, access to CRSs required specialized software and hardware in the past. As a result, CRSs have been used largely by travel agents. However, even leisure travelers can now access these systems over the Internet at minimal cost. This, combined with electronic ticketing, threatens the role of travel agents.

Scope of the electronic market: Another factor that has significantly helped brokers in the aircraft parts industry is that ILS includes product information only and not prices. As a result, buyers can still benefit from using brokers to help them negotiate prices, that is, ILS does not replace the value added by brokers in helping buyers select suppliers. Thus, an electronic market that supports selection with price information may have a more negative affect on the role of brokers than one that supports identification only (Figure 3). As with the cost of access, however, this aspect may also not always be directly within the control of brokers. Ultimately, sellers will decide, based on their own interests, whether or not to list prices. Fortunately, in this case, sellers and brokers have consistent interests. Thus, sellers in the aircraft parts industry are unlikely to begin listing prices on ILS and brokers should continue to add value by assisting buyers with negotiation.

Information verification: Another source of value added by brokers is a function that may be termed "data validation." As noted earlier, sometimes sellers list parts on ILS that they do not have in inventory, hoping to get buyers to call. For buyers, this creates inefficiencies because they are forced to make extra phone calls. Thus, brokers add value by validating the data listed in the system, which includes judging who is likely both to have the part in stock and to represent the condition of the part faithfully. In fact, with ILS, the function of data validation may have increased in importance because a buyer searching ILS may find a longer

list of suppliers, many of whom the buyer has never transacted with before.

The need for data validation by brokers rests at least partly on the fact that ILS itself does not verify the accuracy of the data listed on the system. To do this, ILS would need to examine and certify the quality of each physical part before it was listed, so that buyers would not have to rely on a seller's word and reputation. This is currently the case with some electronic markets, as will be discussed later, but given the number of parts and the volume of transactions, this does not seem feasible in the aircraft parts industry. Hence, brokers should continue to add value with data validation. Figure 3, therefore, shows information verification-that is, whether or not the entity operating the electronic market independently verifies the data listed therein-as an important influence on the impact of electronic markets on the role of brokers.

Inventory

Contrary to proposition 4, buyers in the aircraft parts industry were consistent in their statements that ILS had little impact on inventory levels. Proposition 4 was based on models of economic order quantities which assume that the product in question is used and purchased on an ongoing, regular basis. The analysis in this study, however, shows that buyers use electronic markets primarily for infrequent purchases of items for which they do not maintain much inventory-mostly AOG purchases for larger airlines and some infrequent routine purchases as well for smaller airlines-not for the regular purchase of routinely stocked parts.

That is, the nature of the transactions for which electronic markets are used violates the basic assumptions of economic order quantity models. Therefore, it seems inappropriate to apply these models to form expectations about reductions in inventory from the use of electronic markets.

Further, as discussed earlier, buyers' rationale for using electronic markets selectively is that, for products purchased frequently, the reduction in ordering costs-specifically, the costs of selection, negotiation, and execution-is greater with long term relationships than with an electronic market, particularly one that reduces the cost of identification only. Thus, standard economic order quantity analysis would suggest that long term relationships will be more effective in lowering inventory levels for these products than electronic markets. In addition, as observed in the case of the airline, with an exclusive relationship, a buyer can share consumption information with the seller who, secure in the knowledge that it is responsible for meeting all the demand, can use the information proactively to plan production schedules, thereby reducing inventory in the whole system. These factors may explain why buyers often choose dedicated, long-term relationships to reduce inventory for frequently purchased items. JIT supply relationships, for instance, are typically long-term, often exclusive, sourcing relationships.
Finally, as discussed earlier, it is possible that if the scope of the electronic market extends beyond just identification, and the system also reduces costs of selection and/or transaction execution, buyers may use it for more frequent purchases than was the case with ILS. This, in turn, may have a marginal impact on the inventory levels for these items. However, it is expected that for the most frequently purchased items-the ones with the highest inventory levels-buyers will still prefer longterm relationships to electronic markets. Hence, electronic markets are likely to have minimal impact on buyers' overall inventory levels. Thus, inventory has been excluded from the model in Figure 3.

Conclusion

This paper drew on a study of one electronic market-Inventory Locator Service in the aircraft parts industry-to test and refine existing theory on the use and impacts of electronic markets. The results, while subject to the caution that they are based on a system used for identification only and so may not, in all cases, be generalizable to systems that also support selection and/or transaction execution, nevertheless have some important implications for users and sponsors of electronic markets.

Buyers: The study highlights that while low asset specificity and low complexity of product description may be necessary for the successful

development of electronic markets, they are not, by themselves, sufficient to motivate buyers to adopt these systems. Rather, buyers carefully evaluate the tradeoff between the benefits of routinization and integration with long-term relationships with suppliers-reduced costs of selection, negotiation, and transaction execution-and the benefits, including potentially better prices, of a spot purchase process aided by an electronic market. The latter may be most appropriate for transactions characterized by low frequency of purchase and high market variability. High product value can also affect this tradeoff and a buyer's motivation to use an electronic market.

For instance, airline reservation systems are particularly useful because: (1) most buyers purchase airline tickets, especially to the same destination, relatively infrequently and (2) prices in the industry are highly variable and volatile. As a result, travelers typically need to search the market for each purchase-to find the airlines that offer service at the appropriate time to the specific destination and/or to compare fares. In contrast, when a travel agency finds itself booking a large number of trips between the same two points, it will often try to negotiate a special discount for that route, beyond the published fares, with a particular airline. The airline gets an exclusive contract with the travel agency for that route, the agency gains a competitive advantage, and passengers get a lower fare. For trips on this route, the agency no longer uses a reservation system.

Sellers: For sellers, the study refutes the presumption that electronic markets always result in commoditization of the market with intensified price competition. In particular, our data suggest that the scope of the electronic market can be crucial. A system that includes just product information (identification) and not prices (selection) is unlikely to create price wars but, instead, should allow sellers to respond more effectively to market demand and supply levels, thereby maximizing revenues.

However, sellers' ability to restrict direct price comparisons may be challenged by technology, specifically, by intelligent agents that can create de facto electronic markets on the Internet by retrieving prices from individual sellers' web pages and presenting them to buyers on a single screen (Etzioni and Weld 1995). Earlier, the example of such an intelligent agent, Bargain Finder, in the music CD market was discussed. Some web-based CD vendors, recognizing the importance of restricting direct price comparisons, actively block access to their sites by Bargain Finder. Brokers: The key insight for brokers may be that while electronic markets do not necessarily eliminate their roles, they may need to shift the nature of their value-added, especially over the longer term. As discussed earlier, the cost of access to electronic markets is likely to continue dropping, particularly as the Internet becomes the medium of choice for the implementation of such systems. As a result, an increasing proportion of the final buying population will be able to afford direct access and brokers are unlikely to add much value with just the simple task of matching buyers and sellers.

If an electronic market supports just identification, with product information, and not selection, with direct comparison of prices, the observations in this study suggest that buyers may continue to use brokers, for instance, to help with negotiation, even if they subscribe to the electronic market themselves. In addition, electronic markets can also create a whole new source of value added-validating the data in the system based on brokers' personal knowledge of the market. As electronic markets reduce barriers to entry and create potentially greater fragmentation among sellers, buyers may increasingly be forced to rely on brokers for information on the reliability of suppliers and the data they list on the system. This may lead to the emergence of a whole new class of intermediaries. Once again, some evidence of this is seen on the Internet. Background Research International, an affiliate of the Fairfax Group, a large private investigative agency, has started to certify businesses on the Web based on its analysis of whether or not the business meets certain standards. This eliminates some of the uncertainty faced by consumers as they encounter new vendors and web sites (Zgodzinski 1997). One factor that may threaten the data validation function of brokers is if the sponsor of the electronic market itself assumes this role of information verification, as discussed below.

Market Makers: For sponsors of electronic markets, the study raises the interesting question of the value added by an electronic market. As argued above, in many cases, sellers and brokers have an incentive to keep prices off the system and limit the scope of the system to include just identification, with product information only. In the aircraft parts industry, because of the nature of AOGs, such an electronic market is still of considerable value to buyers, which accounts for the widespread usage of ILS. However, in some other situations, the selection stage may be the key to the value added. For instance, would the intelligent agent, Bargain Finder, still be valuable if it merely located sources for a CD without listing any prices (that is, if it was effectively blocked by most web-based CD vendors)? Because most standard CDs are probably carried by all CD vendors on the web, the information value of such an electronic market would appear to be minimal. On the other hand, collectors may be willing to pay for access to an electronic market that allows them to locate and exchange rare, used CDs that are unavailable through regular channels, even if such a market does not explicitly list prices. Centrox, the electronic market for art described earlier, does add value to its subscribers without including sale prices for the artwork listed. The key to that market is creating awareness among potential buyers of what is available and providing a facility to broadcast information on items that one wishes to make available for sale. Prices, as in the aircraft parts industry, are subsequently settled by negotiation.

An electronic market can also add value if it includes the means to make identification of potential trading partners easier by developing and implementing standardized product descriptions that did not exist before, effectively lowering the complexity of description. For instance, one source of value added by ILS is the automated part number cross referencing system. The founders of American Gem Market System developed and implemented a standardized mechanism for the grading of precious colored stones that did not exist before. This made it easier for dealers to specify over an electronic forum the kinds of stones they were offering or for which they were searching.
Finally, the experience with ILS suggests that it is not always enough to have a standard way to describe products if there is no independent means of verifying that individual parts are being accurately represented by sellers. An electronic market maker can add value by offering such a verification service. For instance, AUCNET, the electronic auction system for used cars in Japan, employs a team of its own inspectors who rigorously check every car they list. This allows buyers to be confident in the quality of the cars without personally inspecting them. Free Markets Online is a system designed to facilitate competitive bidding among sellers for a package of prespecified goods (Free Market 1997). One of their sources of value added is that they screen potential sellers: only those that meet certain standards can participate in the bidding.

In conclusion, while this study advances understanding of electronic markets, it is just a first step. Similar studies are needed in different settings, with different kinds of electronic markets, for various kinds of commodities and differentiated products, and from the perspectives of different players in the value chain, to build the cumulative body of evidence necessary to understand fully the dynamics of the uses and consequences of electronic markets.

For instance, a contrast between this study and a study of an electronic market that permits direct price comparisons may be of particular interest. An example is uVision (http://www.uvision.com), an electronic market in which sellers agree to list their prices for branded computer products (Crowston 1996). What motivates sellers to agree to list prices on an electronic market such as this? How do buyers use such an electronic market differently, if at all, from an electronic market such as ILS? Can brokers continue to add value in such a market?

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(Table Omitted)

Captioned as: Appendix A

Appendix B

(Table Omitted)
Captioned as: Appendix A

Appendix B

(Table Omitted)

Captioned as: Appendix A

Appendix B

(Table Omitted)

Captioned as: Appendix A

Appendix B

Footnote:

*Robert Zmud was the accepting senior editor for this paper.

Footnote:
Endnotes

Footnote:

The term logically is used here because some electronic markets may physically display both product and price information simultaneously. However, this does not affect the logic of the arguments.

Footnote:

This assumes, of course, that the buyer finds, and can identify, one seller with the best product fit. If this is not the case, the buyer will search a few different sellers who vie for the best fit and compare their product fit/price tradeoff. This does not, however, affect the essential logic of the argument.

Footnote:

The economic order quantity for a product, Q', is the square-root of ((2 ' annual demand for the item ' procurement cost per order)/(carrying cost as a percent of inventory value, '/./year * unit cost of the item carried in inventory)). The average inventory on hand for the product is then Q'/2 units.

This is because the list was composed of individuals that served as the primary liaison between their airlines and the ATA for SPEC 2000, the name given to a set of EDI standards developed by the ATA for the exchange of information between airlines and their parts suppliers.

Footnote:

The number of airplanes can be deceiving because airplanes vary widely in size and number of parts; thus, the task of maintaining a fleet of 10 747s is clearly not the same as the task of maintaining 10 small, corporate jets. 6New parts carry a green tag, parts with a yellow tag are either serviceable as removed or overhauled, while red tag parts are not serviceable.

7 A portion of the results in this section was first reported in Choudhury (1997).

Footnote:

In fact, one of the airlines in the survey offered this ae a justification for not subscribing to ILS: "We occasionally use suppliers who check ILS

for us. Our experience shows ILS is full of junk. When we had it on trial, we were already aware of the source." A similar sentiment was expressed by an airline that nevertheless has chosen to subscribe: "Too many people list parts they do not have just to get you to call them." To remind the reader, larger airlines place more than 15,000 purchase orders a year, while smaller airlines are those with fewer than 15,000 purchase orders a year.

Footnote:

While the buyers in the survey did not explicitly mention this possibility, it is reasonable to deduce that if sellers use inventory information to raise prices in the fashion described by the manager at the package delivery company, they can also use the same information to adjust their prices downward when market conditions suggest.

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SYSTEM AND METHOD FOR COLLABORATIVE ORDER FULFILLMENT
SYSTEME ET PROCEDE DE TRAITEMENT DE COMMANDE CONCERTE
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English Abstract
A system and method are disclosed for retailers, wholesalers, and manufacturers of goods to anonymously collaborate in buying and selling order fulfillment contracts and options on order fulfillment contracts, for the purchase and delivery of **inventory** items. The system and method permit businesses to incur lower order fulfillment logistics costs while maintaining or improving customer service **levels** by using a dealer trading module (36) and system trading module (42) to sell order fulfillment contracts and options thereon. A dealer logistics planning module (32) uses information from dealer **inventory** (16), dealer forecasts (30), and system quotes (38) databases to develop a logistics

action plan (34) before trading order fulfillment contracts or options thereon. Entities may buy and sell options for future deliveries of **inventory** . Use of the present invention may reduce **inventory** - carrying costs and order fulfillment transportation costs resulting in improved efficiency and profitability, while maintaining or improving customer service **levels** .

French Abstract
L'invention concerne un systeme et un procede destines a des marchands (detaillants), des grossistes et a des fabricants de marchandises afin qu'ils puissent collaborer de maniere anonyme pour l'achat et la vente concernant des contrats de traitement de commande et d'options sur des contrats de traitement de commande, pour l'achat et la distribution d'articles d'inventaire. Le systeme et le procede permettent a des societes de subir des couts inferieurs de logistique de traitement de commande tout en maintenant ou en ameliorant les niveaux de service client. Plus specifiquement, une entite peut acheter et vendre des options pour des livraisons futures de produits, destines a son inventaire, qui peuvent etre utilises avec le stock reel en cours pour constituer l'inventaire total pour cette entite. Des entreprises commerciales, comprenant des detaillants, des grossistes et des fabricants peuvent utiliser la presente invention afin de reduire leurs couts de maintien d'inventaire et de transport de traitement de commande, ce qui permet d'ameliorer l'efficacite et le profit, tout en maintenant ou en ameliorant les niveaux de service client.

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Inventory also may be sold or optioned onto the market at any time.

Options written and sold on order fulfillment contracts may or may not be exercised, depending on factors, such as customer demand behavior and **spot market** price fluctuations. Upon exercise, options contracts will effectively convert to order fulfillment contracts for immediate product delivery. As an example, information that is received by Dealer Trading Module 36 may include a complete logistics action plan, which is

re-assessed regularly. This plan may consist of expected daily product sales directly to customers, expected product sales onto the **spot market** , expected outstanding option contracts, expected number of **spot market** contracts purchased from the **spot market** , and expected **inventory** on hand.

However, it is understood that more or less information may be received as part of the logistics action plan and still be within the scope of the present invention.

Each of these variables discussed is a function of time throughout the replenishment cycle (the time between real **inventory** replenishment). The logistics action plan also may include an estimate of the economical order quantity, planned date of the next order of physical **inventory** , and planned date of arrival of next physical **inventory** order. The merchant's expected profit is a function of these variables, as well as, the projected **spot market** prices, options market prices, and actual retail sale prices.

Throughout the replenishment cycle, the logistics action plan may be reevaluated based on new information or events. An example of an event that may cause a re-evaluation of the plan is a consistent and/or significant deviation of actual sales from forecasted sales. Sucha deviation may require remodeling to

generate new forecasts and a re-evaluation of the logistics action plan to determine the optimal policy under these new conditions. Revisions to the plan may also be triggered by large changes in the price of **inventory** or the price of **inventory** options in the trading market. The logistics planning system does not affect the rate of product sales to customers. However, the system and method of the present invention provides immediate and essentially continuous control over the number of virtual **inventory** options contracts that are outstanding, the quantity or rate of product sales into the order fulfillment **spot market** , and the date and quantity of the next order to replenish physical **inventory** . The initial order quantity also may be determined by Dealer Logistics Planning Module 32 at the beginning of each replenishment cycle.

The quantity of physical **inventory** between orders may be regulated by the purchase of **spot** **market** order fulfillment contracts whenever the physical **inventory** level drops below the target level. Further, it is possible to view total sales as consisting of product sales to customers, product sales resulting from conversions of **inventory** options written, and product sales through the **spot** **market** . Then, the logistics system may use **spot** **market** sales (or purchases) to regulate total sales within predetermined bounds.

Noting the foregoing, the parameters to be determined by the logistics optimization system are.

(1) The initial quantity of physical **inventory** to be purchased.
(2) The quantity of real and virtual **inventory** to be maintained throughout the replenishment cycle.

(3) The total rate of product sales as a function of time, summed over retail customers, as well as, sales into the trading market.

(4) The timing of the next order for bulk physical **inventory** replenishment.

These parameters, defined throughout the replenishment cycle, are the "decision parameters" which will be discussed in detail subsequently.

Inventory System Structure

In order to determine an optimal set of "decision parameters," which will define an effective logistic action plan, Dealer Logistics Planning Module 32 must build a complete model of the factors that determine the profitability of the dealer in the marketplace. This model includes: (i) the structure that describes the

relationships between the parameters and variables of the model; (ii) the decision parameters, which determine the recommended trading strategy; (iii) the system parameters, which are observable measurements and projections of external inputs to the system; (iv) the random variables, describing the actual events such as price changes and trades which cannot be precisely predicted in advance; (v) the constraints, which set limits on the values of the parameters and variables; and (vi) an objective function (in this case, the dealer's profitability) which yields the quantity to be optimized. This structure will now be discussed

in greater detail.

For a given model and a particular set of decision parameters, the expected profit and variance may be estimated through Monte Carlo simulation. The decision parameters that optimize the expected value of the objective function can be found using conventional optimization methods, such as linear progranuning, simulated annealing, genetic algorithms, or conjugate gradient descent.

In general, the optimal logistics action plan will depend on the specifics of the dealer's situation. However, certain common circumstances may be anticipated. In general, dealers with a low cost structure for **inventory** storage will tend to order much more **inventory** than they expect to sell to their own customers. When a shipment of physical **inventory** arrives, these dealers will seek to maximize revenues from that shipment by selling **inventory** options in order to realize income from their **inventory** investment. They may also sell **inventory** directly into the **spot market** , since their accumulated **inventory** carrying costs at that point are very low and they will find that they can profitably sell into that market. Later in the replenishment cycle when their cumulative **inventory** carrying costs are higher, these dealers will tend to hold **inventory** only for delivery based on options contracts or for their own customers.

' Dealers with high **inventory** carrying costs may decide not to carry any **inventory** at all. These dealers may either purchase virtual **inventory** contracts to get guaranteed cost **levels** , or else may rely entirely on the " **spot** " **market** for their **inventory** needs.

The dealers' **levels** of risk tolerance, and their profitability goals, will be an important factor in determining optimal strategies. Dealers with higher risk aversion will sell fewer options contracts earlier in the cycle, and will buy options contracts to guarantee their costs late in the replenishment cycle. Dealers aiming

for the highest possible expected profit, regardless of risk, will sell

more options contracts and will rely more heavily on the **spot market** for **inventory** purchases.

Dealer insights into future price trends may be used to help determine optimal **inventory** and trading strategies. More specifically, dealers expecting price declines will sell options and purchase **spot market** **inventory** , while dealers expecting price increases will purchase options and physical **inventory** , and sell **inventory** into the **spot** market as prices rise.

Decision Parameters

The optimal strategy for the logistics action plans are represented in terms of decision parameters, which define the appropriate actions in response to various conditions at all phases of the replenishment cycle.

For a single product, the decision parameters for a replenishment cycle are.

I . T,,dqQS,1) - The recommended order quantity for real **inventory** at time t.

2. SALESvirtual(tAI) - The recommended number of virtual **inventory** (call options on order fulfillment contracts) to sell at time t.

3. SALESspodt, S, I) - The recommended number of order fulfillment contracts to sell on the **spot** **market** at time t.

4. PURCIL4SEvirtuaI(tSJ) - The recommended number of virtual **inventory** (call options on order fulfillment contracts) to buy at time t.

5. PURCHASEsp,#,SI) - The recommended number of order fulfillment contracts to buy on the **spot** **market** at time t.

The decision parameters above are expressed as a function of time, t, **spot** **market** sales price, S, and **inventory** level, L Preferably, these are the most significant factors that may effect decisions on a day-to-day basis and cannot be precisely forecasted in advance. However, the decision parameters also may be functions of other variables as well, or constants with respect to any of these variables. As such, the decision parameters may be extended to include additional parameters. Alternatively, any of the decision parameters defined above may be set to a fixed value, or a function of one of the other decision parameters.

Any
of these variants on the definition of the decision parameters would
be
understood to be within the scope of the present invention.

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Since some optimization procedures require an enumerated set of
variables
as parameters, rather than functions, the decision parameters set
forth
above may be represented by a specific set of parameters using a
number
of conventional methods. For example, time t, spot price S, and
inventory level I may be expressed in terms of discrete intervals,
for
example, t--1 to T. If this is the case, the decision parameters
would be
defined at each of these discrete intervals. At high **levels** of
resolution for time, **spot market** sales price, and/or **inventory**
level, representation of the decision parameters could result in a
very
large set of decision parameters.

If a smaller set of parameters is desired for purposes of defining
the
optimization,
the decision parameters may be expressed as generic polynomial or
spline
functions of a few parameters. For purposes of description the
splines
referred to have smooth curves, which connect between specified
points on
a continuous function.
System Parameters
The present invention has system parameters that are used in the
optimization process of the present invention. The following are
system
parameters that are considered. These normally are fixed (not
variable)
with respect to a particular optimization of the decision parameters.
However, these parameters can change value from one optimization run
to
another.

1 . SL: A customer service level specified by a retailer based on the
overall marketing and customer satisfaction strategy.

2. ri,tr,,t: The interest rate specified by the dealer for use over
the
forecast horizon for discounting future cash flows.

3. r,,rry: The carrying cost for each unit of real **inventory** for
each
time increment calculated by Dealer Dynamic Product Costing
Model 14.

4. 0: The direct and indirect costs for ordering real **inventory**

from
Dealer Dynamic Product Costing Model 14.

5. LT. The typical length of time for **inventory** (lead time) to arrive
once an order is placed.

6. OrLT: The standard deviation of the lead time.

3 1
Objective Function
Typically, an objective function calculates a quantity to be optimized by
the choice of decision parameters. In the case of the present invention,
the objective function is used to calculate profit. Accordingly, the
daily profit PROFIT(t) is calculated based on the sum of several profit
source terms. As such, profit may be represented by Expression (16).

PROFIT(t) = PROFI'F,,I,,,,,t + PROFIT,,alspot + (16)
PROFITspot,cust + PROFITOPtIons
where,
PROFITrealcust The profit from sales to customers using real **inventory** for fulfillment.

PROFITreal,spot The profit from selling order fulfillment contracts on the **spot market** .

PROFITSPot,cu.t The profit from selling to customers using **spot market inventory** for fulfillment.

PROFlToption The profit from sales and purchase of virtual **inventory** .

Each of the profit terms may be calculated from the sales price and the
underlying asset cost. The average daily profit over the replenishment
cycle is the objective function. Although maximization of profits is
described here, it is understood that the maximization of other
parameters, such as "Return On Assets" is within the scope of the present
invention.

Constraints
In accordance with the present invention, there are certain constraints
that are limiting factors with respect to the decision parameters and
system variables.

These constraints prevent the decision parameters and system variables
from taking on values outside of specified ranges.

Since there is some level of randomness in product pricing in a trading

market, the profits associated with a particular logistics action plan
cannot be predicted precisely. Higher-risk strategies (more random in outcome) may be associated with higher expected profitability. However,
in many cases, a dealer may be risk averse, and therefore wishes to limit
risk exposure. This constraint is represented by aprofit I which is the
maximum amount of risk that the dealer is willing to bear.

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Other constraints that preferably are considered may include the availability of capital for purchase of **inventory** , the availability of
warehouse space for storing **inventory** , and the availability of labor
for handling **inventory** .

Projecting Future Demand and Prices
There is the use of an appropriate forecasting technique, such as exponential smoothing, neural networks, or ARIMA, to generate predicted
product sales over the decision horizon. The present invention uses a preferred process for projecting future demand and future prices. According to the present invention, there is first an estimate of the future **spot market** price for order fulfillment contracts over the decision horizon. Then, using the Black-Scholes options pricing equation,
there is the calculation of the estimates for the future options prices
over the decision horizon. The factors that are considered with regard to
projecting future demand and future prices are the following.

1. Demand - Given product sales history, planned marketing programs, and industry projections, the Dealer Forecasting Module 28 provides a forecast of future product sales rate over the specified forecasting horizon. The forecast is accompanied by an estimate of its
variance.

2 (t)
d
where,
d(t) Future product sales rate.

07 2 (t) Estimate of its variance.

d
2. Estimates of the Future **Spot Market** Price for Order Fulfillment Contract - Typically, the **spot market** price for an order
fulfillment contract will reflect a small value-added percentage over the
manufacturer's sale price, to reflect expenses of shipping, handling, carrying cost, and addition to a profit for the fulfiller. The **spot**

market price typically will be lower than the retail price. This will allow some profit for the retailer. Occasionally, unexpected variations may occur in the spot price due to unanticipated changes in supply and demand. The **spot market** price is represented by S(t). The price for a product may be modeled using a stochastic differential equation defining a random walk with a systematic drift trend. This is represented by Expression (17).

33
dS a, SdX +,u (t)Sdt (17)
where,
S The **spot market** price.

,U(t) The drift function (this may be used to model systematic price changes due for example, to obsolescence or seasonality) or other.

as The volatility in the spot price of the order fulfillment contract.

dX A normally distributed random variable with a mean of "O" and a standard deviation of -@d-t .
dt The Change in time.

Typical sequences of market prices may be generated by the repeated application of the model set forth in Expression (18) using different sequences of random variation.

3. Estimates of the Future Option Price on an Order Fulfillment Contract - A corresponding sequence of option prices may be generated using the Black-Scholes options pricing technique defined in the section titled "System Pricing Module 40" above. This is represented by Y(t).

Optimization
Now that the system parameters, constraints, and projections have been described, the next step in the process is to deterniine the values for the decision parameters to optimize the profit function. The decision parameters to be determined are T@,dq(tSI), PURCHASEvirtuadtAI), PURCHASEspo#AA SALESvirtua#YSX, SALESspodtSI). Standard linear and/or nonlinear optimization techniques, such as linear programming, quadratic programining, conjugate gradients, simulated annealing, neural networks or genetic algorithms may be used.
In order to evaluate the profit and variance of profit for any given parameterization, multiple pricing realization sequences may be generated using a "Monte Carlo" approach to determine the mean and variance. The

profit, however, must be calculated daily, and surnmed over the replenishment cycle. For each pricing realization sequence, a random sequence of customer sales, fulfillment orders and options conversions also may be generated in conformance with the rate parameters, and then market actions carried out in conformance with the decision parameters.

Alternatively, techniques in stochastic calculus may be used to solve 34 directly for the profit and variance of profit as a function of the parameters. Any conventional optimization method and evaluation method may be used and still be within the scope of the present invention. The model may be simplified in various ways, including not using the random aspects of the pricing sequence, or substituting deterministic pricing models. If the model can be expressed in purely linear sequential terms, then the Simplex methods for solving constrained linear systems may be used.

An Example of A User Interface Configuration and Menu Tree

Referring to Figure 2, the user interface configuration and menu tree module is shown generally at 50 and is preferably implemented in a client/server architecture. In the preferred embodiment, this module may be implemented in a server computer. A client computer, connected to the server computer by means of an information network which include the internet, uses the interface configuration and menu tree to effect receiving and interpreting inputs from the user, transmitting information data and instructions to the server computer, receiving data and instructions from the server computer, and displaying data, reports, recommendations, and contents. There may be other methods for implementing the user interface other than what is shown in Figure 2. Such methods include, but are not limited to, methods that are not client/server Web-based architectures.

According to the preferred embodiment, the client-server architecture will permit the system user to enter via the keyboard of his client system, a URL (Universal Resource Locator). The URL will refer tot he address of the server computer, which provide the **inventory** options trading service. The URL request is relayed to the Internet by the browser software running on the client machine, where it is routed to the options trading server. This server computer then generates a sequence of HTML (Hypertext Markup Language) commands which, when interpreted by the client computer's Internet browser software, cause an image of a "home" page to be generated on the monitor of the client computer. The design of such a "home" page may include menu selection items, attractive image graphics, and text providing basic

information about the options trading service.

The menu selections may include the items Search Box 60, About Us 62, Policies & Procedures 64, Products & Services 66, Alerts 68, Information Services 70, Strategic Planning 72, Demo 74, Open New Account 76, Account Log-on 78, and Customer Service 80. Each of these selections may provide selectable menu items 35 as shown in Figure 2. It is understood that additional menu items or alternative variants on this menu structure may be provided and still be within the scope of the present invention.

Search Box 60, when activated permits the user to specify an Englishlanguage or Non-English-language query and to find related text anywhere in the site structure. Search Box 60 may be implemented using an inverted index or other conventional method.

About Us menu 62, when actuated, generates the representative menu item list as shown. The About Us menu permits the system user to access textual information describing the service.

- Policies and Procedures menu 64 when activated generates the representative menu item list that is shown. Policies and Procedures menu 64 permits access to more textual information covering quotes, order handling, trades execution and checks and balances.

Products & Services menu 66, when activated generates the representative menu item list that is shown. Products & Services menu 66 provides information about accounts, information services, trading, cash management, and insurance and **inventory** management services provided by the system.

Alerts menu 68, when activated generates the representative menu item list shown. Alerts menu 68 is used to post recent news about the system.

Information Services menu 70, when activated, generates the representative menu item list shown. Information Services menu 70 provides utility functions for system users to obtain financial information.

Strategic Planning menu 72, when activated, generates the representative menu item list that is shown. Strategic Planning menu 72 pen-nits the system user to interact with Dealer Logistics Planning Module 32 and Dealer Trading Module 36, which may also run on a central server at an ASP (application service provider), or in-house.

In the preferred embodiment, the server computer issues HTML instructions that causes text entry boxes to be drawn on the user computer screen.

The user then inputs numerical entries via the keyboard in order to communicate requested information.

Demo menu 74, when activated, provides a series of static and/or dynamic screens that describes the capabilities of the system. New Account menu 76, when 36 activated permits a user to create a new account. Account Login menu 78, when activated, permits a user to log-in to the system, and provide identification and authentication information. Customer Service menu 80, when activated, permits the user to send messages to a company representative.

Operation

Referring to Figures 3, 4, and 5, Operation of the system of the present invention will be described. The examples that are being used to describe the system and method of the present invention are representative and not meant to limit the present invention. The examples are only meant to illustrate the trading system's ability to meet **inventory** requirements with improved efficiency compared to the prior art.

Example 1: Order Fulfillment Outsourcing

This describes the system with respect to a Web-based retail merchant.

However, the example also may apply to a wholesaler who desires to.deliver a product to a "brick-and-mortar" retailer who is implementing a Just-In-Time ("JIT") **inventory** system.

Referring to Figure 3, the system is initiated at start 106. After the system is initiated, the retailer configures the system by inputting the information to Dealer Logistics Planning Module 32. The information that is input about past sales, estimated product costs, and planned marketing promotions for their products. Dealer Logistics Planning Module 32 is also supplied with information about the retailer's internal **inventory** **levels** of the product, and carrying costs.

With the assistance of the Dealer Logistics Planning Module 32, the retailer generates forecasts for product sales at 108. When the

forecasts
are generated, the retailer then schedules the purchase of the optimal
mix of real **inventory** , **spot market inventory** , and options on **spot market inventory** as shown at I 10. During the operation of the
system of the present invention, Dealer Logistics Planning
Module 32 recovers system quotes from System Quote Database 38 and the
availability of **inventory** throughout the trading network. After this,
as shown at 1 12, the retailer is prepared to receive an order for a product to be delivered to a customer.

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Based on the information input to Dealer Logistics Planning Module 32, it
makes recommendations regarding the optimal source of **inventory** for each order that must be fulfilled, when, as shown at 112, an order is received.

Possible **inventory** sources include real **inventory** , **spot market inventory** , and options on **spot market inventory** . The system is configured so that the retailer may choose to take or not take the recommendation of the Dealer Logistics Planning Module. As such, it is a
business decision for the retailer.
The decision-making process is shown as steps 114, 116 and 120. Once an
order is received at 112, the retailer at 114 identifies the optimal fulfillment source.

If the source is the options market as shown at 116, then the retailer
will exercise his/her virtual **inventory** call option to obtain the goods
at 1 1 8, and execute a fulfillment contract at 124 for the goods. The
parties who transact business with regard to fulfillment contracts are
not necessarily known to each other.

If it is not an options market source, then it must be determined if it
is a **spot market** source as shown at 120. If it is, the retailer will
purchase a fulfillment contract on the **spot market** at'122, and the
fulfillment contract is formed by the parties at 124 under the conditions
described above.

If it is not a **spot market** source, the order will be filled from the
retailer's on-hand **inventory** at 126. 'Once this is done, the Global
Logistics Optimization Web ("GLOW") system updates the system database at

132 to reflect the change in the retailer's physical **inventory** . Often the system transmits the actions from this order at 132.

If the order was filled from either virtual **inventory** or from the **spot market** , the actual fulfiller fulfills the order at 128. There is dealer anonymity to protect customer data when the fulfiller fulfills the fulfillment contract. This is accomplished by the system using a clearinghouse for fulfilling orders. As such, in reality, at 129, which is within 128, the fulfiller receives instructions from the clearinghouse. These instructions include the product sold, quantity, and the encrypted customer information and address. The fulfiller selects, packs, and labels the ordered products according to the instructions. The label as configured will contain the encrypted customer information and address. The encrypted information may be in the form of a barcode, smartcard, optical transmitter, radio transmitter, wireless transmitter, or other feasible means for encrypting information

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and address to the products being sold. Once it is packaged in this way, the products are ready for processing by the carrier.

The products that have been packed are then picked-up by the carrier at 13 1. The carrier has the appropriate equipment to decode the encrypted information. For example, the carrier may have a special label reader that decodes the encrypted customer information and address. This special label reader may be either a "smart" or "dumb" device. If it is a "smart" device, it will have special processing capabilities to enable it to decode the encrypted information and address without any outside input. However, it is a "dumb" device without this capability, it may use a service provided by the clearinghouse to decode the information. A representative service may include reading the label optically or otherwise, transmitting the information to the clearinghouse for decoding, receiving the decoded information from the clearinghouse, and the carrier displaying the decoded information on a display.

Once the decoded information is in the hands of the carrier, the carrier may print a new label and place it on the package, if desired, or if necessary. Next, the carrier will deliver the package and report back to the clearinghouse and/or the fulfiller that it has been delivered. In any

reporting to the fulfiller, the carrier does not include the customer to whom the package was delivered to maintain anonymity of the customer, and the seller. Next, at 130, the retailer receives a confirmation that the order was fulfilled. Following, this, the GLOW system updates the system databases at 132 with the change in **inventory** and contracts. Now, at 134, the system terminates the transaction with regard to this order.

Further, with regard to the operation just described, if the retailer (or wholesaler) decides that the order is to be fulfilled from the **spot market** at 120, the retailer at 122 will purchase a fulfillment contract on the **spot market** . When this happens, the order is entered into the trading module, which places it either directly with a fulfillment house or other holder of **inventory** or indirectly through a market-maker (if present). Funds to pay for the order are deposited with a clearinghouse at this point. The fulfillment house (or other **inventory** holder) then delivers the product to the customer of the retailer in step 128, by the process described presently which includes the encryption of information 129 and carrier based activities at 131.

By using this method described above, shipping costs are reduced if the fulfiller is geographically closer to the customer than the retailers. Furthermore, the retailer has reduced his need to hold **inventory** , by effectively outsourcing order fulfillment responsibility to a fulfiller on the trading network.

Example 2: Providing Order Fulfillment Outsourcing

Referring to Figure 4, this example describes the situation when a fulfillment house wishes to sell some of its **inventory** promptly. This example may also apply to a retailer, wholesaler, or manufacturer with fulfillment capabilities.

The system is initiated at 150. At this point, the fulfillment house will have provided Dealer Logistics Planning Module 32 with information about past sales, estimated product costs, and planned marketing promotions

for products. Dealer Logistics Planning Module 32 subsequently provides the fulfiller with a logistics action plan that helps the dealer make optimal **inventory** management and trading decisions. System Trading Module 42 provides the fulfiller with information about **inventory levels** across the trading network, and costs and availability at various locations. Based on this information, Dealer Logistics Planning Module 32 makes recommendations regarding to quantity and pricing of **spot market inventory** and options on **spot market inventory** to be placed on the trading network by the fulfiller. As stated with regard to the first example, the fulfiller does not have to take these recommendations. The fulfillment contract specifications, and the desired price and quantity, are entered into the system at 152 by the fulfiller.

If the fulfiller decides to place a fulfillment contract onto the **spot market** , then the placement is entered into system trading module 42. System Trading Module 42 posts this information on the trading network as shown at 154. System Trading Module 42 then awaits the arrival of a matching order from a retailer on the network who requires an **inventory** fulfillment contract for immediate delivery.

This is shown at 156. If, at 158, a contract is sold, the fulfillment contract, which contains the fulfillment instructions, is delivered to the fulfiller at 162. Funds to pay for the order must then be deposited by the purchaser of the contract. The fulfillment house then delivers the product to the customer in accordance with the specifications in the fulfillment contract as shown at 164. However, this is done in a manner described with regard to Example 1 to maintain anonymity. First, the encryption process takes place at 163 then the carrier delivery activities takes place at 165.

Upon fulfillment confirmation at 166, funds are transferred from the clearinghouse to the fulfiller. Finally, the system databases are updated at 168 with information about the transaction.

If the fulfillment contract is not sold at 158, the fulfiller may update the price and quantity at 160 and return it for submission to the process at 152 with the new price and quantity. The fulfiller may also decide not to change the price and quantity and return it to System Trading

Module
42 to await sale of the fulfillment contract at 156.

By using this procedure, shipping costs are reduced if the fulfiller is geographically closer to the customer than the retailer. Furthermore, the retailer has reduced his need to hold physical **inventory** by outsourcing order fulfillment responsibility to the fulfiller.

Example 3: Shipping Arbitrage
This Example is directed to the situation in which a retailer has a customer located a long geographical distance away. The retailer in this situation desires to save on shipping costs without effecting **inventory** or revenue flow. More specifically, the retailer wishes to "book the sale" as though it was delivered from its own **inventory** . In this case, the retailer simultaneously carries out Examples 1 and 2. In doing this, the retailer purchases a fulfillment contract from a fulfiller located close to his customer, and simultaneously sells a fulfillment contract to some other third party on the system whose customer is located closer to the retailer. The fulfiller then delivers the product to the retailer's customer, while the retailer delivers the identical product to the third party's customer. This transaction saves shipping costs effecting neither sales nor **inventory** **levels** .

Example 4: Buying and Exercising Options
This Example is directed to the situation in which a retailer prefers to minimize physical **inventory** holding, yet wants to avoid the risk of not having access to reasonably priced **inventory** as orders come in. By using the trading system, retailer may purchase fulfillment contracts to fulfill orders as orders come in, but, there is a risk that products would not be available on the **spot** **market** at a reasonable price. By purchasing options on **spot** **market** **inventory** (virtual **inventory**), the retailer can assure availability of **inventory** at a predetermined strike or exercise price. These option contracts give retailers a method to reduce risks due to fluctuating supply, demand, and prices of **inventory** .

To do this, the system pools the options contracts, and, as such, they

are not associated with any particular fulfillment vendor until the options are exercised.

Therefore, both the virtual **inventory** and **spot market inventory** offer the same opportunities for shipping cost savings via shipping arbitrage.

In this example, the retailer will have already provided Dealer Logistics Planning Module 32 with full information about supply and demand trends, product costs, and promotions for this product. Dealer Logistics Planning Module 32 then assists the retailer in assessing its internal **inventory** costs and availability of storage for the product. System Trading Module 42 provides the retailer with information about costs and availability of virtual **inventory** across the network.

Based on all this information, the Dealer Logistics Planning Module makes recommendations regarding the quantity of virtual **inventory** options to be purchased. Of course, this recommendation may be overridden by the retailer (or wholesaler) who has the final decision about the action to be taken.

If the retailer decides to order virtual **inventory** options, then the order is entered into System Trading Module 42, which places the order either directly with a fulfillment house or other holder of **inventory** , or indirectly through a marketmaker (if present). Funds to pay for the options must be deposited with a clearinghouse.

Later, as customers purchase items from the retailer, the virtual **inventory** options are exercised, converting them to fulfillment contracts for immediate delivery at the nearest fulfiller with available **inventory** . At that time, the "strike price" of the option must be paid to the clearinghouse to release the item. The fulfillment house then delivers the product to the customer, and funds are transferred from the clearinghouse to the fulfiller. The deliveries are done in the manner described to maintain anonymity.

By using this procedure, shipping costs are reduced if the fulfiller (or other **inventory** holder) is geographically closer than the retailer (or

wholesaler) to the ultimate customer (or "brick-and-mortar" retail destination). Furthermore, the retailer (or wholesaler) has reduced his need to hold **inventory** , transferring this responsibility to the fulfiller (or other **inventory** holder) that may be more efficient.

Example 5: Writing and Selling Option

Referring to Figure 5, Example 5 will be described. This Example is direct to a fulfiller who prefers to hold **inventory** and deliver it to customers belonging to 42 other retailers. By using the **spot market** trading system, the fulfiller may sell fulfillment contracts on a routine basis. However, there are risks that demand might not materialize, or that price might drop'leaving the fulfiller with high **inventory levels** . By entering into virtual **inventory** options contracts, the fulfiller may cover part of his **inventory** carrying costs, ensure a basic demand level, and reduce risk.

Again referring to Figure 5, the system is initiated at 250. At this time, the fulfiller may provide Dealer Logistics Planning Module 32 with full information about supply and demand trends, product costs, and promotions for products. The Dealer Logistics Planning Module assists the fulfiller in assessing its internal **inventory** costs and availability of storage for the product. The fulfiller develops a forecast of expected product sales and demand at 252. System Trading Module 42 provides the fulfiller with information about current pricing for virtual **inventory** across the network. Based on this information, the Logistics Planning System makes recommendations regarding the quantity of virtual **inventory** options to be sold. These recommendations may or may not be taken by the fulfiller who has the final decision about the action to be taken.

If the fulfiller decides to sell virtual **inventory** options, then the order is entered into System Trading Module 42 at 254. This places the order either directly with a retailer or other dealer or indirectly through a market-maker (if present). In the same manner as selling a fulfillment contract that was described above, selling an option on a fulfillment contract may involve placing an offer and waiting for a bid from a retailer to complete the transaction, if there is no marketmaker in the system.

At 256, the fulfiller waits for the option to be exercised. As shown at 258, if the call option is not exercised over time, it must be determined if the call option expired. If it has not expired at 262, and the fulfiller does not desire to cancel its short position, it returns to 256 and again awaits the exercise of an option.

However, at any time, the fulfiller may effectively cancel the option by purchasing an offsetting call option in the same product with the same expiration as shown at 264. If this happens, the next step is to use the GLOW system to update the system databases at 278, and the transaction is ended at 280.

At 266, if a retailer holding an option receives an order from a customer, the retailer might exercise the option, converting it to a fulfillment contract for

immediate delivery. At that time, the fulfillment house receives delivery instructions as shown at 268. Then, at 268, the fulfillment house begins the determination of the fulfillment source. The fulfiller reviews its own **inventory** and market conditions to determine whether to falfill the order from its own **inventory** or whether to purchase **inventory** from another fulfiller. Therefore, at 270, if it is determined that **spot market** will be fulfiller source, then the writer will provide a fulfillment contract to fill the order at 274. As such, for purpose of delivery, there is encryption at 275 and carrier activities at 247. in the manner described above for maintaining anonymity. The fulfiller then sends a confirmation of delivery of the product to the writer. Taking this, the GLOW system updates the system database at 279 and the transaction is terminated at 280.

If, on the other hand, the source is the writer's own **inventory** , the order is filled from that **inventory** and as the fulfiller the writer at 276 sends confirmation that the order has been filled. Although not shown, if necessary the process for maintaining anonymity is used. Next, the GLOW system updates the system database at 276 and the transaction is terminated at 280. When the confirmation is sent to the retailer at 276, funds are transferred from the clearinghouse to the fulfiller.

By using the present invention, shipping costs are reduced if the fulfiller (or other **inventory** holder) is geographically closer than the retailer (or wholesaler) to the ultimate customer (or "brick-and-mortar" retail destination). Furthermore, the fulfiller has improved his/her economy of scale, smoothed his/her **inventory** flows, and reduced his/her average costs, by taking advantage of the opportunity to carry out logistics tasks on behalf of other retail merchants.

Example 6: **Inventory** Optimization and Shipping Arbitrage

The situation in Example 6 involves a dealer who both holds **inventory** and sells and delivers products to customer. This dealer wishes to save on shipping costs and also minimize his/her physical **inventory** costs and total **inventory** costs.

This may be achieved by the dealer simultaneously using the methods of Example 4 and 5. That is, the dealer purchases and sells options on fulfillment contracts.

The dealer will select the specific mix and timing of purchases and sales based on the market factors. As orders arrive, they are filled optimally from either real or virtual **inventory** , and orders placed with other merchants are also delivered from real **inventory** as sold options are converted. This type of transaction method saves

shipping costs and allows the dealer to take advantage of a far-flung network of **inventory** sources while operating with reduced safety stock.

The terms and expressions that are employed herein are terms or description and not of limitation. There is no intention in the use of such terms and expressions of excluding the equivalents of the feature shown or described, or portions thereof, it being recognized that various modifications are possible within the scope of the invention as claimed.

```
? show files;ds
File  15:ABI/Inform(R) 1971-2005/Nov 22
         (c) 2005 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2005/Nov 23
         (c) 2005 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2005/Nov 23
         (c)2005 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2005/Nov 22
         (c) 2005 The Gale Group
File 621:Gale Group New Prod.Annou.(R) 1985-2005/Nov 23
         (c) 2005 The Gale Group
File   9:Business & Industry(R) Jul/1994-2005/Nov 22
         (c) 2005  The Gale Group
File  20:Dialog Global Reporter 1997-2005/Nov 23
         (c) 2005 Dialog
File 476:Financial Times Fulltext 1982-2005/Nov 24
         (c) 2005 Financial Times Ltd
File 610:Business Wire 1999-2005/Nov 23
         (c) 2005 Business Wire.
File 613:PR Newswire 1999-2005/Nov 23
         (c) 2005 PR Newswire Association Inc
File  24:CSA Life Sciences Abstracts 1966-2005/Oct
         (c) 2005 CSA.
File 634:San Jose Mercury  Jun 1985-2005/Nov 22
         (c) 2005 San Jose Mercury News
File 636:Gale Group Newsletter DB(TM) 1987-2005/Nov 23
         (c) 2005 The Gale Group
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
File  13:BAMP 2005/Nov W2
         (c) 2005  The Gale Group
File  75:TGG Management Contents(R) 86-2005/Nov W2
         (c) 2005 The Gale Group
File  95:TEME-Technology & Management 1989-2005/Oct W3
         (c) 2005 FIZ TECHNIK
File 348:EUROPEAN PATENTS 1978-2005/Nov W01
         (c) 2005 European Patent Office
File 349:PCT FULLTEXT 1979-2005/UB=20051117,UT=20051110
         (c) 2005 WIPO/Univentio

Set     Items   Description
S1          0   SPOT()MARKET()PRODUCT()COST? ?
S2       9537   SPOT()MARKET? ?(30N)(ITEM? ? OR PRODUCT? ? OR MATERIAL? ? -
             OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INVENTORY OR STOCK)-
             (5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR BIDS)
S3        992   IMMEDIATE()(AVAILABLE OR DELIVERY)(10N)(ITEMS OR PRODUCT? ?
              OR MATERIAL? ? OR GOODS OR SERVICE? ? OR MERCHANDISE? OR INV-
             ENTORY OR STOCK)(5N)(COST? ? OR PRICE? ? OR PRICING OR BID OR
             BIDS)
S4     426321   PRODUCT? ?(2N)COST? ?
S5   24572077   PRICE OR PRICES OR PRICING OR COST? ?
S6      10688   SPOT()RATE? ?
S7        752   SAFETY()STOCK()LEVEL? ?
S8       6309   (SAFE OR SAFETY OR RISK)(6N)(STOCK OR INVENTORY)(6N)(LEVEL?
            ? OR VOLUME? ?)
S9         68   (S2 OR S3) AND S6
S10        13   (S2 OR S3) AND S8
S11         5   S6 AND (S7 OR S8)
S12        86   S9:S11
S13        59   S12 NOT PY>2002
S14        41   RD (unique items)
? t14/3,k/all

 14/3,K/1     (Item 1 from file: 15)
DIALOG(R)File  15:ABI/Inform(R)
(c) 2005 ProQuest Info&Learning. All rts. reserv.

02513644  265985491
```

Death, taxes & single stock futures
Simons, Howard L
Futures v31n15 PP: 34-36 Dec 2002
ISSN: 0746-2468 JRNL CODE: CMM
WORD COUNT: 1905

...TEXT: three unknowns, the two interest rates and the spot exchange rate. As a result, any **spot rate** or any single interest rate can clear the market for some trader, and the multiple...

...never receive any income or return of principal until you sell which raises the overall **risk level** for **stock** ownership. This behavior is akin to betting your entire stake each hand in a poker...

14/3,K/2 (Item 2 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02326767 107834517
Using forward contracts to hedge foreign investment in US real estate
Ziobrowski, Brigitte; Ziobrowski, Alan
Journal of Property Valuation & Investment v13n1 PP: 22-43 1995
JRNL CODE: PRVF
WORD COUNT: 5597

...TEXT: with high precision. The interest rate parity relationship demands that: Equation (2).

where

-- S = current **spot rate** (foreign investor's home country currency per dollar)

-- r = risk-free rate in the foreign...gains to both British and Japanese investors. The benefits were greatest at the middle risk **levels** , tapering off at both the high- and low- **level risk** ranges. The strongest US financial asset was clearly common **stock** . At its maximum, the hedged US common stock comprised over 77 per cent of the...contracts versus no hedging, 1973-1991; Figure 1; . Return on a foreign investment in the $ **spot rates** versus forward rates; Table II; . Domestic rates of return for Japanese and British assets (1973...

14/3,K/3 (Item 3 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01789875 04-40866
Uses and consequences of electronic markets: An empirical investigation in the aircraft parts industry
Choudhury, Vivek; Hartzel, Kathleen S; Konsynski, Benn R
MIS Quarterly v22n4 PP: 471-507 Dec 1998
ISSN: 0276-7783 JRNL CODE: MIS
WORD COUNT: 16910

...TEXT: and plan. The airline, without the assurance of timely supply, would have to maintain higher **inventory levels** , or **risk** having to purchase at inflated prices. Finally, the airline leverages the exclusive contracts, along with its large volumes, to receive substantial **price** discounts. While it is possible that, on any specific transaction, the airline may still be able to obtain a lower **price** on the **spot market** , these occasional potential **price** savings are outweighed by the transactional and contractual benefits of an exclusive contract.

The fact that ILS does not allow direct **price** comparisons also affects the FBO's decision not to use ILS extensively for routine purchases...

14/3,K/4 (Item 4 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01173633 98-23028
Monetary policy shocks and long-term interest rates
Edelberg, Wendy; Marshall, David
Economic Perspectives (Federal Reserve Bank of Chicago) v20n2 PP: 2-17 Mar/Apr 1996
ISSN: 1048-115X JRNL CODE: ECP
WORD COUNT: 6185

...TEXT: implies that changes in forward interest rates should provide unbiased forecasts of changes in future **spot rates** . Unfortunately, tests of equation 1 using postwar U.S. data tend to decisively reject the ...of Economic Analysis. It measures the change in a composite index based on two sensitive **materials price** series, the producer **price** index of 28 sensitive crude and intermediate **materials** and the **spot market price** index of industrial raw **materials** .

6 In particular, the **price** level displays a sustained rise following a monetary contraction.

7 In this study, Y sup...

14/3,K/5 (Item 5 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01027861 96-77254
PaineWebber sells new puts on yen in face of rally
Pratt, Tom
Investment Dealers Digest v61n18 PP: 11 May 1, 1995
ISSN: 0021-0080 JRNL CODE: IDD
WORD COUNT: 434

...TEXT: for a new issue.

Sources noted that a huge gap had opened up between the **spot market** and the nearest strike **price** on any of the outstanding yen put warrants. So retail investors looking for a low- **cost** way to speculate on the dollar had no good alternatives.

"We brought the **product** based on our research and significant retail demand for a new strike," said John Braddock...

...100 minus ($100 times 83.25 divided by the spot yen/dollar exchange rate). The **spot rate** was 83.25 when the deal was priced.

In order for investors to break even...

14/3,K/6 (Item 6 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01010271 96-59664
Butadiene tightening seen in second half
Hoffman, John
Chemical Marketing Reporter v247n14 PP: 3, 13 Apr 3, 1995
ISSN: 0090-0907 JRNL CODE: CHM
WORD COUNT: 989

...TEXT: balance for most of the year.

"We don't see any significant pressure on US **pricing** ," a second producer notes. "Demand is very strong right now, yet **prices** are softening because inventories are high. Very little **material** is sold in the **spot market** , but spot **prices** have fallen to the low-20-cent-per-pound range."

He adds that contract butadiene **prices** could fall to 22 to 23 cents per pound, but he calls that the **pricing** "floor."

"They won't get any lower," he says. "Pricing could escalate in a couple...

...are contracted and are probably shipped at contract rates which are lower than the US **spot rate** ."
He adds that high freight rates are "a major factor" in the butadiene market. He...

14/3,K/7 (Item 7 from file: 15)

00907396 95-56788
Spot rates rule the air cargo market
Steele, Lawrence
Global Trade & Transportation v114n8 PP: 1, 28 Aug 1994
ISSN: 0893-7893 JRNL CODE: GTR
WORD COUNT: 858

Spot rates rule the air cargo market
...TEXT: rate commitments will be hard to find. As it has since the Gulf War, the **spot market** for air cargo rates continues to vary from region to region and season to season.

"Everyone is playing wait and see," said general manager of **pricing** and **service** Tom Schlemmer of Fritz Air Freight, one of the largest buyers of air cargo space...

14/3,K/8 (Item 8 from file: 15)

00703133 93-52354
Money market futures
Kuprianov, Anatoli
Economic Review (Federal Reserve Bank of Richmond) v78n6 PP: 19-37
Nov/Dec 1992
ISSN: 0094-6893 JRNL CODE: ERR
WORD COUNT: 12293

...TEXT: traded money market futures contracts in some detail. A discussion of the relationship between futures **prices** and underlying **spot market prices** follows. The concluding section examines the economic function of futures markets.

AN INTRODUCTION TO FUTURES...

...traditionally have been characterized as exchange-traded, standardized agreements to buy or sell some underlying **item** on a specified future date. For example, the buyer of a Treasury bill futures contract...

...specified bill in accordance with the terms of the contract. In contrast, a "cash" or " **spot** " **market** transaction simultaneously **prices** and transfers physical ownership of the **item** being sold.

The advent of cash-settled futures contracts such as Eurodollar futures has rendered...losses sustained over the course of the next trading session would be based on that **price** .

FINAL SETTLEMENT

Because buying a futures contract about to mature is equivalent to buying the underlying **item** in the **spot market** , futures **prices** converge to the underlying **spot market price** on the last day of trading. This phenomenon is known as "convergence." At the end...SETTLEMENT When a futures contract contains provisions for physical delivery, market forces cause the futures **price** to converge to the **spot market price** as the delivery date draws near. Actual delivery of the underlying **item** never takes place with a cash-settled futures contract, however. Instead, the futures exchange forces the process of convergence to take place by setting the final settlement **price** equal to the **spot market price** prevailing at the end of the last day of trading. Final settlement is

achieved by marking the contract to market one last time based on the final settlement **price** determined by the exchange.
PRICE QUOTATION Eurodollar time deposits pay a fixed rate of interest upon maturity. The rate of...Thus, the current outlook for these latter two contracts remains uncertain as of this writing.

PRICE RELATIONSHIPS BETWEEN FUTURES AND SPOT MARKETS

Price relationships between futures and **spot markets** can be explained using arbitrage **pricing** theory, which is based on the premise that two different assets, or combinations of assets, that yield the same return should sell for the same **price** . Buying a futures contract on the final day of trading is equivalent to buying the underlying **item** in the cash market, since delivery is no longer deferred once futures contract matures. Thus, arbitrage **pricing** theory predicts that the futures **price** of an **item** should just equal its **spot market price** on the futures contract maturity date: this is just the phenomenon of convergence noted earlier. Buying a futures contract before the contract maturity date fixes the **cost** of future availability of the underlying **item** . But the cost of future availability of an **item** can also be fixed in advance by buying and holding that **item** . Holding actual physical stocks of a commodity or security entails opportunity costs in the form of interest foregone on the funds used to purchase the **item** and, in some instances, explicit storage costs. The cost associated with financing the purchase of an asset, along with related storage **costs** , is known as the **cost** of carry. Since physical storage can substitute for buying a futures contract, arbitrage **pricing** theory predicts that the **cost** of carry should determine the relationship between futures and **spot market prices** .

BASIS AND THE **COST** OF CARRY

The **cost** of carry for agricultural and other commodities includes financing **costs** , warehousing fees, transportation **costs** , and any transactions **costs** incurred in obtaining the commodity. Storage **costs** are negligible for financial assets such as Treasury bills and Eurodollar deposits. Moreover, financial assets...of the cost of carry. This relationship is easily demonstrated by rearranging terms in the **cost** of carry relation to yield

$S(0) - F(0,T) = -c(0,T)$.

Positive carrying **costs** imply a negative basis--that is, a futures **price** above the **spot market price** . In such instances the buyer of a futures contract pays a premium for deferred delivery, known as contango.

CASH-AND-CARRY ARBITRAGE
To see why futures **prices** should conform to the **cost** of carry model, consider the arbitrage opportunities that would exist if they did not. Suppose the futures price exceeds the cost of the underlying **item** plus carrying costs; that is,

$F(0,T) > S(0) + c(0,T)$

In this...

...one-year holding period is

$(0.10 - 0.15)\$100 = -\$5$.

Thus, the fair futures **price** for delivery in one year is 95.

The net **cost** of carry is negative in this last example, resulting in a futures **price** below the **spot market price** . This type of **price** relationship is known as backwardation. It is common for interest rate futures **prices** to exhibit a pattern of backwardation, although this pattern can be reversed when short-term...

...than long-term rates.
REVERSE CASH-AND-CARRY ARBITRAGE

If the futures price of an **item** fails to reflect full carrying costs, arbitrageurs have an incentive to engage in an operation...6)!.

The no-arbitrage futures interest rate can thus be calculated from the other two **spot** **rates** by rearranging terms to yield

r sub f (3,6) = 1 + r(0,6)!/ 1...

14/3,K/9 (Item 9 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

00685512 93-34733
The interdependence between the dry cargo and tanker markets
Beenstock, Michael; Vergottis, Andreas
Logistics & Transportation Review v29n1 PP: 3-38 Mar 1993
ISSN: 0047-4991 JRNL CODE: LTR
WORD COUNT: 7065

...TEXT: vessel prices is discussed more fully in Beenstock (1985).

TIME CHARTER MARKET

The unpredictability of **spot** **rates** has led to the development of time charter contracts between shipowners and shippers. The market...time charter rate varies directly with expectations of future freight rates in the voyage or **spot** **markets** and inversely with expected unit voyage **costs** . It also varies inversely with the risk premium.

THE MARKET FOR VESSELS

Our presentation distinguishes between new and secondhand vessels, and considers associated **stock** flow equilibria. Ships, like other assets, are demanded by investors who seek to earn a...

14/3,K/10 (Item 10 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

00644770 92-59710
The Information Content of Prices in Derivative Security Markets
Scott, Louis O.
International Monetary Fund Staff Papers v39n3 PP: 596-625 Sep 1992
ISSN: 0020-8027 JRNL CODE: IMF
WORD COUNT: 9504

...TEXT: pricing model for futures and forward contracts is the cost-of-carry model: the forward **price** is equal to the spot **price** plus the **cost** of carry or storage. This model is based on simple arbitrage. If the forward **price** is too high, the arbitrageur buys the asset or commodity on the **spot** **market** and sells forward. The forward **price** must be just high enough to offset the storage **costs** that must be incurred while the arbitrageur waits for delivery. If the forward **price** is too low, then an arbitrageur who holds the asset or commodity in **inventory** can sell on the **spot** **market** , buy forward, and thereby avoid the carrying **costs** over the life of the forward contract. This approach to **pricing** futures and forward contracts, which has been used by traders for many years, was used...

...of-carry model is easy to apply in financial markets because the transportation and transactions **costs** are small, and the **cost** of carry or storage is simply the interest rate or the opportunity **cost** on cash that is used to purchase the asset on the **spot** **market** . An adjustment must be made for potential cash flows, dividends, or interest on the asset. For futures contracts on **stock** indexes or **stock** portfolios, the model is

(Equation omitted)

where F is the forward **price** , S is the spot index or the spot value of the portfolio, R is the...In the active foreign exchange markets, the forward rate is essentially a function of the **spot** **rate** and the two

interest rates. The difference between the forward rate and the **spot rate** is determined by the interest rate differential, and there is no special role for expectations of futures **spot rates**, although these expectations are, of course, important in the determination of current **spot rates**.

Numerous empirical studies have examined tests of forward rates as predictors of future spot exchange...

...in the efficient-markets literature. The hypothesis that forward rates are optimal predictors of future **spot rates** in foreign exchange markets is frequently rejected in these studies. For a discussion of these...

...rates for a recent period, 1983-89. The time series are weekly observations on the **spot rate** and the 90-day forward rate, and I ran the following regression:

(Equation 16 omitted...one that is large enough to break completely the linkage between implied volatilities in option **prices** and expectations of future volatility in the **spot market**.

REFERENCES

Beckers. Stan, "Standard Deviations Implied in Option **Prices** as Predictors of Future **Stock Price** Variability," Journal of Banking and Finance, Vol. 5 (September 1981), pp. 361-81.

Black, Fischer, "Studies of **Stock Price** Volatility Changes," Proceedings of the 1976 Meetings of the American Statistical Association, the Business and...

...pp. 1029-54.
--, and Robert J. Hodrick, "Forward Exchange Rates as Optimal Predictors of Future **Spot Rates**: An Econometric Analysis," Journal of Political Economy, Vol. 88 (October 1980), pp. 829-53.

Hodrick...

14/3,K/11 (Item 11 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

00599882 92-15055
Budgeting for an International Business
Mannino, Paul V.; Milani, Ken
Management Accounting v73n8 PP: 36-41 Feb 1992
ISSN: 0025-1690 JRNL CODE: NAA
WORD COUNT: 4512

...TEXT: scheduled for delivery and payment in six months (during the next budgetary period). The current **spot rate**, U.S. interest rate, and Japanese interest rate are 140 yen/dollar, 6%, and 7...

...Power Parity states that the expected inflation differential between countries is inversely proportional to the **spot market** foreign exchange rate. Usually this theory is valid in the long run because the **prices** of **goods** do not move as freely as exchange rates. Also, different **goods** are used to determine inflation in different countries. Because of its long-run nature, Purchasing...

14/3,K/12 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

12168723 Supplier Number: 95909781 (USE FORMAT 7 FOR FULLTEXT)
Continued growth in dairying forecast. (New Zealand).
Dairy Markets, p7(2)
Dec 19, 2002
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade

Word Count: 1206

... to decrease over this period, mainly due to lower milk payouts.
Recovery in international spot **prices**
MAF expects international **spot market product prices** to continue recovering over the medium term with generally higher world growth rates expected from next year and an expected increase in demand for dairy **products** in Asia and non-OECD countries as incomes rise.
Noting that compared with other dairy...

...378 387
Casein (3) ('000t) 111 109 131 138 138 138

International dairy product prices (**spot rates**)

Butter (1) (fob US$/tonne) 1 250 1 150 1 020 1 150 1 210...

14/3,K/13 (Item 2 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

10183474 Supplier Number: 93998940 (USE FORMAT 7 FOR FULLTEXT)
Portal.(air cargo carriers forming an alternative to Global Freight Exchange)
Conway, Peter
Airline Business, p58
Nov 1, 2002
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1628

... from GF-X, which has struggled to shake off its dot.com image as a **spot market** for distressed cargo **inventory** (an image GF-X itself insists was never accurate).
Jim Friedel, president of Northwest Cargo, explains that CPS is aimed at reducing transaction **costs** - which he puts at $10-15 per air waybill - and not at creating a new...

...some routes. "But if a rate is needed, it is best handled by a salesman. **Spot rates** are needed in specific situations that cannot be explained on a computer. In such cases...

14/3,K/14 (Item 3 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

07881511 Supplier Number: 65844800 (USE FORMAT 7 FOR FULLTEXT)
Downstream Planning.
APS Review Downstream Trends, v55, n15, pNA
Oct 9, 2000
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 1002

... owners. When tanker freight rates are high, the oil companies may find that their own **costs** are lower than the **spot market** rate. Their refineries will pay a **price** for crude oil (landed **cost** of crude) which is likely to set the gross **product** worth of the refinery output and the bulk market **price** for oil **products** . Certainly, tanker owners will benefit in the short term from the high **spot market** rates, but traditionally this leads to an over-ordering of tankers with a subsequent slump in **spot rates** .
It is therefore unlikely that any oil company will plan to take a leading position...

14/3,K/15 (Item 4 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

06769520 Supplier Number: 57003009 (USE FORMAT 7 FOR FULLTEXT)
New Internet Start-up will Match Empty Space of LTL Carriers with Shippers Seeking Cost Savings.
PR Newswire, p2377
Oct 29, 1999
Language: English Record Type: Fulltext
Document Type: Newswire; Trade
Word Count: 1173

... 5,000-25,000 pound shipments. The industry's current solution to this dilemma is " **spot rate** " programs that require shippers to make dozens of phone calls to LTL carriers to identify the best rate. A quick and easy-to-use **service** to marry shippers with the right carriers, at the right time and the right **price** does not exist. GoLogistics.com will fill this void.
The Internet-enabled **service** will provide shippers the capability to purchase excess capacity on Less-Than-Load carriers on an as needed basis, based upon a " **spot market** " **pricing** program. Rates have been established using a uniform rate base for shipping between 5-digit...

14/3,K/16 (Item 5 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

03848804 Supplier Number: 45513888 (USE FORMAT 7 FOR FULLTEXT)
PaineWebber sells new puts on yen in face of rally: Many outstanding issues now virtually worthless
Investment Dealers' Digest, p11
May 1, 1995
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 585

... for a new issue.
Sources noted that a huge gap had opened up between the **spot market** and the nearest strike **price** on any of the outstanding yen put warrants. So retail investors looking for a low- **cost** way to speculate on the dollar had no good alternatives.
"We brought the **product** based on our research and significant retail demand for a new strike," said John Braddock...

...100 minus ($100 times 83.25 divided by the spot yen/dollar exchange rate). The **spot rate** was 83.25 when the deal was priced.
In order for investors to break even...

14/3,K/17 (Item 6 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

02516373 Supplier Number: 43327935 (USE FORMAT 7 FOR FULLTEXT)
Shippers urge carriers, forwarders to concentrate on service, not price
Traffic World, p30
Sept 28, 1992
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1145

... manager for Digital Equipment Corp., said he goes through no contract negotiation without talking about **price** , 'but that's the last thing we talk about after the **service** .'
He and others said the forwarders were relying too much on **spot markets** at the expense of reliability and customer loyalty.
'I don't care what the forwarder...

...a pre-arranged time.
Scherck said shippers were relying on 'time-based management.
'Leaner, lower **levels** of **inventory** are driving the decisions of mode or carrier. ... They are doing away with **safety stock** , they are doing away with finished-goods warehouses.
'They don't want it there early...

14/3,K/18 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
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15320276 SUPPLIER NUMBER: 95791911 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Continued growth in dairying forecast. (Markets).(New Zealand dairy exports to Europe; forecasts output by type in 2001-2006 (forecast))
Agra Europe, M/9(1)
Dec 20, 2002
ISSN: 0002-1024 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 418 LINE COUNT: 00055

... but with annual growth tailing off, mainly as a result of lower expected payouts.
World **price** recovery
MAF expects international **spot market product prices** to continue recovering over the medium term as incomes grow, particularly in Asia and non-OECD countries.
Noting that cheese is a premium **product** with few real substitutes, it says the recovery in demand is expected to be aided...378 387

Casein (3) ('000t) 111 109 131 138 138 138

International dairy product prices (**spot rates**)

Butter (1) (fob US$/tonne) 1 250 1 150 1 020 1 150 1 210...

14/3,K/19 (Item 2 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

14862547 SUPPLIER NUMBER: 90311517 (USE FORMAT 7 OR 9 FOR FULL TEXT)
TORM Announces 2002 First Half Results; Revenues from Operations in Line with Expectations; Tanker Division Outperformed Spot Market in Volatile Trading Conditions.
Business Wire, 2546
August 12, 2002
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 3825 LINE COUNT: 00397

... profit) from shipping activities (a)

DKKm		Six months ended June-02	Share	June-01	Share
Product	Tankers	155	97%	441	89%
Dry Bulk		-15	-9%	29	6%
Liner		19	12%	14...	
...Offshore		0	0%	9	2%
Total		159	100%	492	100%

(a) Gross earnings minus operating **costs** , which comprise port expenses, bunkers, commissions, crewing, maintenance etc. and hire but excluding administration, interest and depreciation.
Product Tanker Operations
The tanker division achieved earnings ahead of expectations and outperformed the **spot market** against a ...forward market indicates rates for the fourth quarter will increase 7% to 10% over current **spot rates** .
The product tanker division has covered some 60% of voyage exposure for the third quarter...

14/3,K/20 (Item 3 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
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13034005 SUPPLIER NUMBER: 67162842 (USE FORMAT 7 OR 9 FOR FULL TEXT)
An Examination of the Lead/Lag Relationship Between the Option Market and

the Stock Market: Where Do We Stand?
Hentze, Staffan; Seiler, Michael J.
Quarterly Journal of Business and Economics, 39, 1, 35
Wntr, 2000
ISSN: 0747-5535 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 6465 LINE COUNT: 00531

... on foreign currency. Foreign currency options contain information outside what is presented in their underlying **spot market** exchange rates. They proclaim that the currency options market leads the currency **spot market** . Likewise, Peterson and Tucker show that the **spot rates** implied by currency options lead currency returns, which contributes evidence that derivative **prices** lead their corresponding underlying **prices** .
In Sum, there appear to be informational differences between the options market and the **stock** market. Moreover, the reactions of option and stock prices differ. We do not know if...19 (Autumn 1981), pp. 435-458.
(18.) Peterson, D.R., and A.L. Tucker, "Implied **Spot Rates** as Predictors of Currency Returns: A Note," Journal of Finance. 43 (March 1988), pp. 247...

14/3,K/21 (Item 4 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

12364422 SUPPLIER NUMBER: 62796620 (USE FORMAT 7 OR 9 FOR FULL TEXT)
DOES MARKET TIMING CONTRIBUTE TO THE CATTLE CYCLE?
HAMILTON, STEPHEN F.; KASTENS, TERRY L.
American Journal of Agricultural Economics, 82, 1, 82
Feb, 2000
ISSN: 0002-9092 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 9514 LINE COUNT: 00829

... model.
Net profit for a manager of a given type is calculated from simulated revenues, **costs** , and capital gains in each period. In period t, define the value of the current cattle **inventory** as (I.sub.t), denote the **spot market prices** for heifer calves, steer calves, adult cows, and bulls, as ((P.sup.H).sub.t...return on assets) statistically greater than that of the representative producer at the 1% (10%) **level** .
(20.) There is also a difference in the **level** of **risk** borne by the representative producer and constant **inventory** manager. Results available from the authors show that the difference in mean net return between...

14/3,K/22 (Item 5 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

11135080 SUPPLIER NUMBER: 54955911 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Synthetic and enhanced index strategies using futures on U.S. indexes.(Special Theme: Derivatives & Risk Management)
Hill, Joanne M.; Naviwala, Humza
Journal of Portfolio Management, 61(1)
May, 1999
ISSN: 0095-4918 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 7101 LINE COUNT: 00609

... quantitative techniques that rely on a process for identifying "alphas" (or excess returns) for each **stock** , and then combine stocks to control tracking **risk** of the benchmark to a target **level** . We refer to these as **stock** -based enhancement strategies.
Long/short strategies represent a particular version of this strategy; long and...monthly synthetic index return. The interest rate is derived from a yield curve constructed from **spot rates** and Eurodollar futures prices. The rate corresponding to the nearby index futures expiration date is...1997, and 5.60% on July 31, 1997. These rates can be considered the annualized **spot rates** for zero-coupon bonds maturing at the nearby futures expiration, namely, September 19, 1997. Assuming...

14/3,K/23 (Item 6 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08238566 SUPPLIER NUMBER: 17476776 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Independent storage in Asia-Pacific. (oil and petrochemical storage)(Asia Special Report)
Semple, Elizabeth
Petroleum Economist, v62, n9, p54(3)
Sep, 1995
ISSN: 0306-395X LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 3189 LINE COUNT: 00280

... to sell out of storage. In addition, there is a strong focus on value-added **services** such as blending petroleum **products** to meet the wide range of **product** qualities needed in Asia's various domestic markets.
By 1994, independent storage operators saw their term customers hesitating to renew relatively high- **priced** , long-term contracts, and shifting a large portion of their business onto the **spot market** . Storage takers have increasingly minimised their term exposure in 1995 and have either sought the...War, to around $3.50-3.75/cm at present. In mid-1994, a monthly **spot rate** of $3 60/cm was generally considered to be a strong resistance mark.
While Singapore...

14/3,K/24 (Item 7 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

07274695 SUPPLIER NUMBER: 15261659 (USE FORMAT 7 OR 9 FOR FULL TEXT)
1994 trade show in print. (appliance industry suppliers)
Appliance, v51, n5, p77(66)
May, 1994
ISSN: 0003-6781 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 22833 LINE COUNT: 01934

... exact specifications. With emphasis on these essentials, Pierson guarantees your end-use application. By maintaining **safe** levels of custom **inventory** for you, **immediate delivery** is ensured--with **price** protection--regardless of sudden production schedule changes. Quality **product** , **price** protection, and on-time delivery all combine to form a "worry-free" way to buy...program enables our customers to profit from the economy of larger runs while enjoying lower **inventory levels** . For large quantity buyers, we offer **safety stock** warehousing.
By making all our own tools, we maintain the internal control we believe is...

14/3,K/25 (Item 8 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

05878695 SUPPLIER NUMBER: 12107813 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Budgeting for an international business.
Milani, Ken; Mannino, Paul V.
Management Accounting (USA), v73, n8, p36(6)
Feb, 1992
ISSN: 0025-1690 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 4820 LINE COUNT: 00426

... scheduled for delivery and payment in six months (during the next budgetary period). The current **spot rate** , U.S. interest rate, and Japanese interest rate are 140 yen/dollar, 6%, and 7...

...Power Parity states that the expected inflation differential between countries is inversely proportional to the **spot market** foreign exchange rate. Usually this theory is valid in the long run because the **prices** of **goods** do not move as freely as exchange rates. Also, different **goods** are used to determine inflation in different countries. Because of its long-run

nature, Purchasing...

14/3,K/26 (Item 9 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

05576999 SUPPLIER NUMBER: 11789681 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Calmer waters for chemship owners. (more balanced freight rates for chemical shipping)
Davies, Lyn
Fertilizer International, n304, p43(3)
Dec, 1991
ISSN: 0015-0304 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 1804 LINE COUNT: 00142

TEXT:
...deepsea chemical shipping market. Not least was the Gulf Crisis, which saw a doubling in **spot rates** on some routes between September and December last year, as chemical buyers sought to source...
... need to enter the market for further product.
On the transpacific route, where demand and **spot rates** had fallen especially dramatically during the Gulf conflict, there was considerable downward adjustment in freight...is due to an increase in contract liftings, ahead of the New Year round of **price** increases, leaving charterers with fewer options for prompt shipments. Bad weather has also put pressure on charterers to use the **spot market** if prompt shipments cannot be **serviced** by normal contract vessels.
Demand for stainless steel ships is firmer than it is for...

14/3,K/27 (Item 10 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

04597460 SUPPLIER NUMBER: 08473128 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Loan commitments and optimal monetary policy.
Duca, John V.; Vanhoose, David D.
Journal of Money, Credit & Banking, v22, n2, p178(17)
May, 1990
ISSN: 0022-2879 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 6357 LINE COUNT: 00531

... negotiates floating-rate commitment loan contracts in which the firms pay a markup over the **spot rate** at time t, but have the discretion to borrow as needed or pay down any...

...loan precommits itself to making credit available to a firm during period t using a **spot rate** as an index,(4) and such a firm precommits itself to paying a variable rather...

...of the bank commitment rate (that is, the sum of intermediation costs and the expected **spot rate**), where [E.sub.t-1] [is equalto] the expectation based on time t - 1 information...have no qualitative implications on our results, we have chosen to simplify by assuming the **costs** to these firms is so great that they do not participate in a **spot market** .
(6) This assumption is consistent with a production function in which other inputs exhibit declining marginal **products** that increase as working capital rises.
(7) The upward trend since 1983 may reflect that...

14/3,K/28 (Item 11 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

03939574 SUPPLIER NUMBER: 07544107 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Deregulation of utilities: the natural gas experience.
Dreyfus, Daniel A.
Business Economics, v24, n2, p41(7)
April, 1989

CODEN: BECODS ISSN: 0007-666X LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT
WORD COUNT: 5495 LINE COUNT: 00446

... rights to gas reserves for future supply has been greatly increased. In addition, even the **inventory costs** of providing in advance for he normal seasonal variations in gas demand cannot be collected in competition with the low **spot market prices** being dictated by excess production capacity.
FERC Orders No. 436 and 500 provide pipelines an...

...their traditional merchant role by becoming open-access transporters. However, while greater reliance on transportation **volumes** will reduce a pipeline's exposure to **inventory risk** , other liabilities emerge. Regulatory oversight of pipelines is not eliminated by open access, but its ...more likely to be able to find gas in a tight supply situation. When spot **prices** go up and brokers are unable to find new supplies, it is unlikely to be...

...gets shut down by a free market.
The distribution companies that have gone on the **spot market** will have to pay peak **prices** because, whatever they may think, they will find that they have a utility obligation to find gas for their **service** area. Small distribution companies or gas-using entities (such as school districts) that may have...

14/3,K/29 (Item 12 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

03932982 SUPPLIER NUMBER: 07100350 (USE FORMAT 7 OR 9 FOR FULL TEXT)
The risk premium in the foreign exchange market.
Sibert, Anne
Journal of Money, Credit & Banking, v21, n1, p49(17)
Feb, 1989
ISSN: 0022-2879 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 6459 LINE COUNT: 00496

... class of studies focuses on the relationship between the forward rate and the expected future **spot rate** . In recent years, a plethora of empirical studies have indicated that the forward rate is not an unbiased estimator of the future **spot rate** .(2) This result might be taken as evidence of inefficiency in the foreign exchange market...find the optimal levels of the forward contracts and their prices, given real balances and **spot rates** . To dothis, it is shown that (21) and (22) can be solved for the optimal...Mathematical Expression Omitted] This says that the forward rate is equal to the expected future **spot rate** plus a term which can loosely be thought of as a risk premium, because it...

...the efficiency condition.
Econometric studies finding divergence of the forward rate from the expected future **spot rate** have attributed it to the presence of a time-varying risk premium. (See, for example...and Kaminsky and Peruga (1986). (2)Most authors find that when they regress the future **spot rate** on the current forward rate, they cannot reject the hypothesis ...are serially correlated, implying that the forward rate is not equal to the expected future **spot rate** ,conditional on all time-t information. (3)Because the model here has exchange rates determined...

...If the two single-period utility functions of each agent are homothetic, then the relative **prices** of the two **goods** are a function of tastes and endowments, but the determination of exchange rates is qualitatively the same. (4) **Spot market** transactions are not prohibited in this model, but they never take place. Young agents hold...

14/3,K/30 (Item 1 from file: 160)
DIALOG(R)File 160:Gale Group PROMT(R)
(c) 1999 The Gale Group. All rts. reserv.

01069175

How the spot market affects European oil.
Hydrocarbon Processing June, 1984 p. 34c-o1

... systems and sophisticated communication networks to monitor rapid changes in world oil pricesP The European **spot market** and its role have changed extensively and opportunities and risks have greatly increased, although the basic market mechanism for setting **prices** has been not altered. For independent traders, the **spot market** has become an end in itself and trading **product** streams is a secondary activity. Up to 30-40 percent of the world's oil has been bought and sold short-term at **spot rates** . Independent traders are facing more competition from some major oil firms, including BP, Esso and...

14/3,K/31 (Item 1 from file: 9)
DIALOG(R)File 9:Business & Industry(R)
(c) 2005 The Gale Group. All rts. reserv.

02869336 Supplier Number: 93998940 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Portal.
(air cargo carriers forming an alternative to Global Freight Exchange)
Airline Business, p 58
November 01, 2002
DOCUMENT TYPE: Journal ISSN: 0268-7615 (United Kingdom)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 1488

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:
...from GF-X, which has struggled to shake off its dot.com image as a **spot market** for distressed cargo **inventory** (an image GF-X itself insists was never accurate).

Jim Friedel, president of Northwest Cargo, explains that CPS is aimed at reducing transaction **costs** - which he puts at $10-15 per air waybill - and not at creating a new...

...some routes. "But if a rate is needed, it is best handled by a salesman. **Spot rates** are needed in specific situations that cannot be explained on a computer. In such cases...

14/3,K/32 (Item 2 from file: 9)
DIALOG(R)File 9:Business & Industry(R)
(c) 2005 The Gale Group. All rts. reserv.

00605139 Supplier Number: 23169850 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Butadiene Tightening Seen in Second Half
(Butadiene prices are stable due to high level of inventories and imports from Europe but plant turnarounds and high consumption could disrupt this later in 1995)
Chemical Market Reporter, p 3+
April 03, 1995
DOCUMENT TYPE: Journal ISSN: 1092-0110 (United States)
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 1405

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:
...balance for most of the year.

"We don't see any significant pressure on US **pricing** ," a second producer notes. "Demand is very strong right now, yet **prices** are softening because inventories are high. Very little **material** is sold in the **spot market** , but spot **prices** have fallen to the low-20-cent-per-pound range." He adds that contract butadiene **prices** could fall to 22 to 23 cents per pound, but he calls that the **pricing** "floor."

"They won't get any lower," he says. "Pricing could escalate in a couple...

...are contracted and are probably shipped at contract rates which are lower than the US **spot rate** ."

He adds that high freight rates are "a major factor" in the butadiene market. He...

14/3,K/33 (Item 1 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
(c) 2005 Dialog. All rts. reserv.

13846531 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Benign factors seen to cushion GDP slowdown
Chi Lo
SOUTH CHINA MORNING POST, p7
November 19, 2000
JOURNAL CODE: FSCP LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 844

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... low and longer-term Hong Kong dollar forwards could stay at a discount to the **spot rate** , despite tight global liquidity.
... and US dollar.
Longer-term Hong Kong dollar forwards may remain in discount to the **spot market** on continued capital inflow. All of this suggests that the liquidity push for Hong Kong **stock prices** might not be over, though the lack of **pricing** power might constrain earnings growth.
Nevertheless, GDP growth will not be able to escape a...

14/3,K/34 (Item 2 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
(c) 2005 Dialog. All rts. reserv.

11000542 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Bergesen d.y. ASA - 1st Quarter Results
REGULATORY NEWS SERVICE
May 12, 2000
JOURNAL CODE: WRNS LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 3091

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... 500/day, compared with USD 23,900/day in 1999.
The first quarter began with **spot market** rates still in the doldrums on account of low OPEC output and record-high oil **prices** . Historically low stocks and correspondingly high **prices** for most oil **products** , including bunker fuels, meant that a rise in the worldscale rates had only a minor impact on T/C rates. However, **spot rates** rallied towards the end of the quarter on the strength of indications that OPEC would...

...with 1999.
The market for large dry bulkers picked up during the first quarter, with **spot rates** for modern Capesize tonnage ending the period at around USD 20,000/day and 12...

14/3,K/35 (Item 3 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
(c) 2005 Dialog. All rts. reserv.

06670377 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Bergesen d.y. ASA - 2nd Quarter & Interim Results
REGULATORY NEWS SERVICE
August 12, 1999
JOURNAL CODE: WRNS LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 2751

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... fix two vessels on 12-month time charters at the beginning of the third quarter. **Spot rates** at the end of the second quarter stood at USD 700,000/month for newer tonnage (excluding waiting time). Activity in the **spot market** has dropped back again during the third quarter as a result of increasing **product prices** .
Several factors contributed to the increase in activity during the second quarter. **Price** increases for crude oil and petroleum **products** were far greater than for LPG, and many players expected LPG to follow suit, resulting...

... day during the same period last year. Three tankers were drydocked during the second quarter.
Spot rates came under considerable pressure at the beginning of the second quarter due to OPEC's...of 1998.
The dry bulk carriers market for large deteriorated further during the second quarter. **Spot rates** for modern vessels stood at around USD 5,500/day at the end of the...

14/3,K/36 (Item 4 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter
(c) 2005 Dialog. All rts. reserv.

05381607 (USE FORMAT 7 OR 9 FOR FULLTEXT)
TeleCommodities Forward Price Indices Launched by RateXchange
PR NEWSWIRE
May 19, 1999
JOURNAL CODE: WPRW LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 858

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... and Los Angeles. RTBX provides rapid trade execution, delivery, billing and payment. Transaction and opportunity **costs** are significantly reduced through rapid delivery and neutral facilitation. Carriers trade anonymously and on the basis of call quality.
RateXchange is also a leading source of **spot market** information, providing market indices and **spot rate pricing** guides on its Website. RateXchange, the Real-Time Bandwidth eXchange (RTBX), TeleCommodities, the Revealed **Price** Index (RTBX*RPI) are the Revealed Forward **Price** index (RTBX*RFP) are trade and **service** marks of RateXchange. The exchange is located at www.ratexchange.com.
About Oncept
Oncept is...

14/3,K/37 (Item 1 from file: 476)
DIALOG(R)File 476:Financial Times Fulltext
(c) 2005 Financial Times Ltd. All rts. reserv.

0009506611 B0IBDAOADEFT
Survey - FT Information Technology: Risk Factors For Producers: A perilous business
GEOFFREY NAIRN
Financial Times, Survey London Edition 1 ED, P 4
Wednesday, February 4, 1998
DOCUMENT TYPE: Surveys; NEWSPAPER LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
Word Count: 1,051

...the current trouble spot but it is not the only problem facing chipmakers. Intel's **risk** list includes changes in customers' **inventory levels** , seasonal PC buying patterns, pricing pressures, excess or shortage of capacity, bugs in processors and...

...D-rams - see report, page 7 - are staple memory chips found in every computer but **prices** are highly volatile. They are commodity **items** - there is even a **spot market** for D-rams - and all the top ten chip vendors, apart from Intel, depend on...

14/3,K/38 (Item 2 from file: 476)

DIALOG(R)File 476:Financial Times Fulltext

0001516220 B0CDMB6ABCFT
UK News: BNOC may come under pressure to lift oil prices
RAY DAFTER, ENERGY EDITOR
Financial Times, P 6
Tuesday, April 27, 1982
DOCUMENT TYPE: NEWSPAPER LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
Word Count: 487

TEXT:
...an immediate formal request for a price revision. The companies are keen to see whether **spot rates** will maintain their rises.

...the official contract rate and about Dollars 7.50 a barrel higher than the spot **price** just more than a month ago.

The **spot rate** for Arab light crude has also risen significantly, to about Dollars 32.50, up Dollars 4.50 from a month ago. The traders emphasised that the **spot market** was quiet and the **prices** may not reflect the true value of small cargoes. They said the spot **prices** of **products** indicated a lower true value of crudes: about Dollars 33 a barrel for North Sea...

14/3,K/39 (Item 1 from file: 813)
DIALOG(R)File 813:PR Newswire

1206165 SFM002
RateXchange Launches a Commodities Exchange for International Telecom Capacity On the World Wide Web

DATE: January 5, 1998 08:30 EST WORD COUNT: 685

... telecom by creating a forum and a benchmarking process that exceeds industry standards."

The RateXchange **service** will offer buyers of wholesale international telecommunications competing offers for the same or similar routes and sellers an improved, **cost** -effective method of distribution. The **service** aims to improve the flow of information between buyers and sellers by creating technological and contractual standards for all transactions. RateXchange also integrates a **spot market** in which benchmarking will measure buy/sell rates against the **spot rate** for a particular route.

"RateXchange will transform the way wholesale telecommunications is bought and sold...

...wholesale international telecommunications competing offers for the same or similar routes and sellers an improved **cost** effective method of distribution. The **service** will utilize technological and contractual and create a **spot market** in which benchmarking will be made possible by measuring buy/sell rates against the **spot rate** for a particular route.

The mission of RateXchange is to create an efficient wholesale market ...

14/3,K/40 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00955847 **Image available**
PRICING DELIVERY SYSTEM
SYSTEME DE DIFFUSION D'INFORMATIONS RELATIVES A L'ETABLISSEMENT DE PRIX
Patent Applicant/Assignee:
UBS AG, 677 Washington Boulevard, Stamford, CT 06901, US, US (Residence), US (Nationality)
Inventor(s):
TANG Cedric, 3 Disraeli Park, Beaconsfield, Bucks, HP9 2QE, GB,

Legal Representative:
STELLABOTTE John C (agent), PROSKAUER ROSE LLP, 1585 Boadway, Room 17-26, New York, NY 10036-8299, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200288881 A2-A3 20021107 (WO 0288881)
Application: WO 2002US13283 20020426 (PCT/WO US0213283)
Priority Application: US 2001843124 20010426
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI
SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 4465

Fulltext Availability:
Detailed Description

Detailed Description
... For certain financial products, real-time pricing information is readily available. For example, for financial **products** that trade through a centralized exchange, such as the New York **Stock** Exchange, the exchange typically aggregates in real-time the most recent transactions executed on the exchange for each security and makes such real-time **pricing** information available to its subscribers. The subscribers can then use the real-time information to analyze their portfolio, **spot** **market** trends and make informed investment decisions.
Many financial **products** , however, do not trade through a centralized exchange having a central book but are traded over-the-counter ("OTC") in which case real-time **pricing** information and analy-tics is not readily available. In OTC markets, for example the
1...different trading time zone.

hi an exemplary embodiment, the pricing information includes volatility surfaces, FX **spot** **rates** and short term interest rates.

hi another exemplary embodiment, a global pricing manager is included...

14/3,K/41 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00903169 **Image available**
SYSTEM AND METHOD FOR COLLABORATIVE ORDER FULFILLMENT
SYSTEME ET PROCEDE DE TRAITEMENT DE COMMANDE CONCERTE
Inventor(s):
RUSSELL Gerald S, 11427 Carmel Cape, San Diego, CA 92130, US,
Patent Applicant/Inventor:
BROWN Kenneth B, 4 Cogswell Avenue, Apt. No. 7, Cambridge, MA 02140, US, US (Residence), US (Nationality)
Legal Representative:
KENNARD Wayne M (agent), Hale and Dorr LLP, 60 State Street, Boston, MA 02109, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200237234 A2-A3 20020510 (WO 0237234)
Application: WO 2001US50706 20011019 (PCT/WO US0150706)
Priority Application: US 2000702923 20001020
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ

TM TR TT TZ UA UG UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 18163

Fulltext Availability:
Detailed Description
Claims

Detailed Description
... in stock throughout an entire order cycle with a probability SL, referred to as "service **level** ," the retailer must maintain **safety** **stock** ssi in addition to the predicted future sales mi. The **safety** **stock** will be at a **level** that will insure that the retailer will maintain a predetermined service level. This will mean...week for retailer "i".

XI The observed demand per week for retailer "i".
Ssi The **safety** **stock** for the week for retailer "i".

In the above example, a **safety** **stock** of ssi 2ai will result in a 97.72% service **level** .

The present invention, unlike the prior example, provides n retailers with the ability to pool...

...stock for the week for "n" number of retailers.

To assure a 97.72% service **level** , the **safety** **stock** required is according to Expression (7).

7
SST 2aT 2ai IFn (7)
where,
SST The...effect of this policy will be to reduce the average length of time that each **item** remains in the **inventory** , thus cutting average **inventory** **levels** and **costs** for dealers, while drastically reducing or eliminating the **risk** of **stock** -out.
110
An object of the present invention is to provide a " **spot** **market** " for trading of fulfillment contracts for immediate delivery of **inventory** **items** . These **inventory** items are not limited to consumer good, or manufactured or commodity item of standard specification...levels and estimated costs, including capital costs, storage costs, obsolescence costs and shrinkage. Alternatively, the **inventory** availability information may have been manually entered by the system user, or may have been...

...equipment, such as bar code readers.

The inventory cost estimates that are stored in Dealer **Inventory** Database 16 are used by the dealer to calculate a reasonable asking **price** for order fulfillment contracts that will be placed for sale on the **spot** **market** . A reasonable asking **price** is assumed to be an asking **price** that gives the dealer a contribution margin large enough to generate the required return on investment over long term **product** sales and **cost** projections.

Information relating to the availability and **pricing** of **spot** **market** **inventory** and options on **spot** **market** **inventory** is stored in the System Quotes Database 38.

In a system with a "market-maker," firm market **price** quotes will be available. In a system with no "market-inaker," quotes -will consist of ...

...Database 30. The third input to Dealer Logistics Planning Module 32 is

the data on **pricing** and availability of **spot market inventory** and options on **spot market inventory** stored in System Quotes Database 38.

Dealer Logistics Planning Module 32 processes the input information to generate a logistics action plan. The logistics action plan will include the optimal **inventory** strategies, given a particular dealer's constraints and rules. These constraints and rules advise how...

...subsequently. This action also takes place when the dealer is seeking to replenish on-hand **inventory** .

As described, System Quotes Database 38 provides the third input to Dealer Logistics Planning Module...

...Now, the information that is stored in this database will now be described.

I System **Pricing** Module 40 estimates the **costs** of option contracts based on **spot market pricing** data. Preferably, this module uses a Black-Scholes model or binomial model, as discussed in further detail below.

The estimates generated by System **Pricing** Module 40 are the first input to System Quotes Database 38. The second input to...by r,,,,r,,g, (t) , which indicates its dependence on time.

(d) rik(t) - The **inventory risk** costs, such as **risk** of obsolescence, shrinkage, and damage. These costs are often related to **inventory level** . Obsolescence costs are costs incurred at the end of a
product's life cycle, when...at some point, or there may be a physical limit on the maximum amount of **inventory** that may be stored at a location. These factors and constraints may be
coupled with the additional terms, which must be considered in **inventory**

determinations.
23
System **Pricing** Module (40)
System **Pricing** Module 40 is used for estimating options **prices** , based on
quotes available for current **spot market prices** from System Quotes Database 38.

Considering the input just described, option **pricing** may be calculated using Black5 Scholes equation that has been to account, modified for the carrying **cost** and the right to exercise the option at anytime before it expires. This is represented...needed, he can use the trading system to obtain additional inventory to meet any shortfall.

Inventory also may be sold or optioned onto the market at any time.

Options written and...

...may or may not be exercised, depending on factors, such as customer demand behavior and **spot market price** fluctuations. Upon exercise, options contracts will effectively convert to order fulfillment contracts for immediate **product** delivery. As an example, information that is received by Dealer Trading Module 36 may include...

...an estimate of the economical order quantity, planned date of the next order of physical **inventory** , and planned date of arrival of next physical **inventory** order. The merchant's expected profit is a function of these variables, as well as, the projected **spot market prices** , options market **prices** , and actual retail sale **prices** .

Throughout the replenishment cycle, the logistics action plan may be reevaluated based on new information...inventory than they expect to sell to their own customers.

When a shipment of physical **inventory** arrives, these dealers will seek to maximize revenues from that shipment by selling inventory options...

...realize income from their inventory investment. They may also sell

inventory directly into the spot market , since their accumulated inventory carrying costs at that point are very low and they will...

...they can profitably sell into that market. Later in the replenishment cycle when their cumulative inventory carrying costs are higher, these dealers will tend to hold inventory only for delivery based on options contracts or for their own customers.
' Dealers with high inventory carrying costs may decide not to carry any
inventory at all. These dealers may either purchase virtual inventory contracts to get guaranteed cost levels , or else may rely entirely on the " spot " market for their inventory needs.

The dealers' levels of risk tolerance, and their profitability goals, will be an important factor in determining optimal strategies. Dealers...

...fewer options contracts earlier in the cycle, and will buy options contracts to guarantee their costs late in the replenishment cycle. Dealers aiming
29
for the highest possible expected profit, regardless of risk, will sell more options contracts and will rely more heavily on the spot market for inventory purchases.

Dealer insights into future price trends may be used to help determine optimal inventory and trading strategies. More specifically, dealers expecting price declines will sell options and purchase spot market inventory , while dealers expecting price increases will purchase options and physical inventory , and sell inventory into the spot market as prices rise.

Decision Parameters
The optimal strategy for the logistics action plans are represented in terms...

...on the spot market at time t.

4. PURCIL4SEvirtuaI(tSJ) - The recommended number of virtual inventory (call options on order fulfillment contracts) to buy at time t.

5. PURCHASEsp,#,SI) - The recommended number of order fulfillment contracts to buy on the spot market at time t.

The decision parameters above are expressed as a function of time, t, spot market sales price , S, and inventory level, L Preferably, these are the most significant factors that may effect decisions on a...

...be defined at each of these discrete intervals. At high levels of resolution for time, spot market sales price , and/or inventory level, representation of the decision parameters could result in a very large set of decision...

...alspot + (16)
PROFITspot,cust + PROFITOPtIons
where,
PROFITrealcust The profit from sales to customers using real inventory for fulfillment.

PROFITreal,spot The profit from selling order fulfillment contracts on the spot market .

PROFITSPot,cu.t The profit from selling to customers using spot market inventory for fulfillment.

PROFlToption The profit from sales and purchase of virtual inventory .

Each of the profit terms may be calculated from the sales price and the
underlying asset cost . The average daily profit over the replenishment cycle is the objective function. Although maximization of...

...an appropriate forecasting technique, such as exponential smoothing, neural networks, or ARIMA, to generate predicted **product** sales over the decision horizon. The present invention uses a preferred process for projecting future demand and future **prices** . According to the present invention, there is first an estimate of the future **spot market price** for order fulfillment contracts over the decision horizon. Then, using the Black-Scholes options **pricing**0 equation, there is the calculation of the estimates for the future options **prices** over the decision horizon. The factors that are considered with regard to projecting future demand and future prices are the following.

1. Demand - Given **product** sales history, planned marketing programs, and industry projections, the Dealer Forecasting Module 28 provides a...

...is accompanied by an estimate of its variance.

2 (t)
d
where,
d(t) Future **product** sales rate.

07 2 (t) Estimate of its variance.

d
2. Estimates of the Future...

...order fulfillment contract will reflect a small value-added percentage over the manufacturer's sale **price** , to reflect expenses of shipping, handling, carrying **cost** , and addition to a profit for the fulfiller. The **spot market price** typically will be lower than the retail **price** . This will allow some profit for the retailer. Occasionally, unexpected variations may occur in the spot **price** due to unanticipated changes in supply and demand. The **spot**

market price is represented by S(t). The **price** for a product may be modeled using a stochastic differential equation defining a random walk ...

...represented by Expression (17).
33
dS a, SdX +,u (t)Sdt (17)
where,
S The **spot market price** .

,U(t) The drift function (this may be used to model systematic **price** changes due for example, to obsolescence or seasonality) or other.

as The volatility in the spot **price** of the order fulfillment contract.

dX A normally distributed random variable with a mean of...subsequently provides the fulfiller with a logistics action plan that helps the dealer make optimal **inventory** management and trading decisions. System Trading Module 42 provides the fulfiller with information about **inventory** levels across the trading network, and **costs** and availability at various locations. Based on this information, Dealer Logistics Planning Module 32 makes recommendations regarding to quantity and **pricing** of **spot market inventory** and options on **spot market inventory** to be placed on the trading network by the fulfiller. As stated with regard to...

...fulfiller does not have to take these recommendations. The fulfillment contract specifications, and the desired **price** and quantity, are entered into the system at 152 by the fulfiller.

If the fulfiller decides to place a fulfillment contract onto the **spot market** , then the placement is entered into system trading module 42. System Trading ...to the third party's customer. This transaction saves

shipping costs effecting neither sales nor **inventory** levels.

Example 4: Buying and Exercising Options
This Example is directed to the situation in...

...come in, but, there is a risk that products would not be available on the **spot market** at a reasonable **price** . By purchasing options on **spot market** inventory (virtual inventory), the retailer can assure availability of inventory at a predetermined strike or exercise **price** . These option contracts give retailers a method to reduce risks due to fluctuating supply, demand, and **prices** of inventory.

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To do this, the system pools the options contracts, and, as such...
...any particular fulfillment vendor until the options are exercised.

Therefore, both the virtual inventory and **spot market inventory** offer the same opportunities for shipping **cost** savings via shipping arbitrage.

In this example, the retailer will have already provided Dealer Logistics Planning Module 32 with full information about supply and demand trends, **product costs** , and promotions for this **product** . Dealer Logistics Planning Module 32 then assists the retailer in assessing its internal **inventory** costs and availability of storage for the **product** . System Trading Module 42 provides the retailer with information about costs and availability of virtual...

...to pay for the options must be deposited with a clearinghouse.

Later, as customers purchase **items** from the retailer, the virtual **inventory** options are exercised, converting them to fulfillment contracts for **immediate delivery** at the nearest fulfiller with available **inventory** . At that time, the "strike **price** " of the option must be paid to the clearinghouse to release the item. The fulfillment...
...5 will be described. This Example is direct to a fulfiller who prefers to hold **inventory** and deliver it to customers belonging to
42
other retailers. By using the **spot market** trading system, the fulfiller may sell fulfillment contracts on a routine basis. However, there are risks that demand might not materialize, or that **price** might drop'leaving the fulfiller with high **inventory** levels. By entering into virtual inventory options contracts, the fulfiller may cover part of his **inventory** carrying costs, ensure a basic demand **level** , and reduce **risk** .

Again referring to Figure 5, the system is initiated at 250. At

Claim
... generating information relating to a
predictive model of future sales for at least the first **product** ;
(c) dealer forecasting module for generating information relating to an estimate of future demand and future demand variability, and planned future
marketing promotions for at least the first **product** ;
.(d) system **pricing** module for generating information relating to estimates of **costs** of option contracts according to **spot market pricing** data;
(e) system quotes storage structure for storing information relating to an availability and **pricing** of **spot market inventory** and options on spot **inventory** based on the information in the system **pricing** module and system information
relating to matched **bids** and offers for **inventory** options;
(f) dealer logistics planning module for generating information relating to logistics action plans based on information from the dealer **product** costing
module, dealer forecasting module, and system quote storage structure;
(g) dealer trading module for...

...Dt 2 s@ as
where,
V The value of an option at time "t."

S **Spot market price** of an underlying asset. t Time. a Volatility of underlying-asset. rinterest=Risk free interest rate.
rcarry= Carrying **cost** .

8 The logistics system as recited in claim 1 wherein, the dealer logistics planning module generates logistics action plans according to optimal
inventory and trading policies.

9 The logistics system as recited in claim 9 wherein, a logistics... generating information relating to a
predictive model of future sales of at least the first **product** ;
(c) dealer forecasting module for generating information relating to an estimate of future demand and future demand variability, and planned future
marketing promotions for at least the first **product** ;
(d) system **pricing** module for generating infon-nation relating to estimates of **costs** of option contracts according to **spot market pricing** data;
(e) system quotes storage structure for storing information relating to an availability and **pricing** of **spot market inventory** and options on spot **inventory** based on the information in the system **pricing** module and system information
relating to matched **bids** and offers for **inventory** options;
(f) dealer logistics planning module for generating information relating to logistics action plans based on information from the dealer **product** costing
module, dealer forecasting module, and system quote storage structure;
(g) dealer trading module for...
...as terestv < 0
where,
V The value of an option at time 66t. 15
s **Spot market price** of an underlying asset. t Time. G Volatility of underlying asset. rinterest=Risk free interest rate.
rcarry=Carrying **cost** .

24 The logistics system as recited in claim 17 wherein, the dealer logistics planning module generates logistics action plans according to optimal
inventory and trading policies.

25 The logistics system as recited in claim 24 wherein, a logistics... from the system quotes module.

34 The system as recited in claim 33, wherein the **items** include options contracts.

35 The system as recited in claim 34, wherein system risk management is provided by using options contracts to guarantee access to **items** at a
predetermined **price** .
36 The system as recited in claim 34, wherein a system user that purchases options contracts can speculate on future selling **prices** of such options
on a **spot market** .

37 The system as recited in claim 34, wherein a system user can sell options contracts on a **spot market** to speculate on future selling **prices** on the **spot market** .
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?